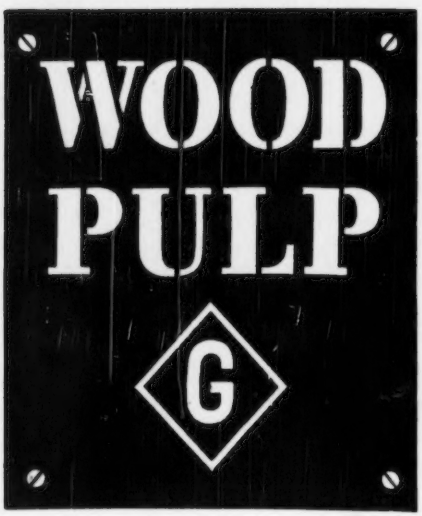
Paper

Nov. 16, 1950

HOW CAN WE MEET GOVERNMENT REQUIREMENTS WITHOUT DISTURBING PRODUCTION?

CAN PARTIAL ACIDIFICATION SOLVE YOUR OPERATION PROBLEMS?

CAN THE CURLATOR IMPROVE THE QUALITY OF YOUR PULP?



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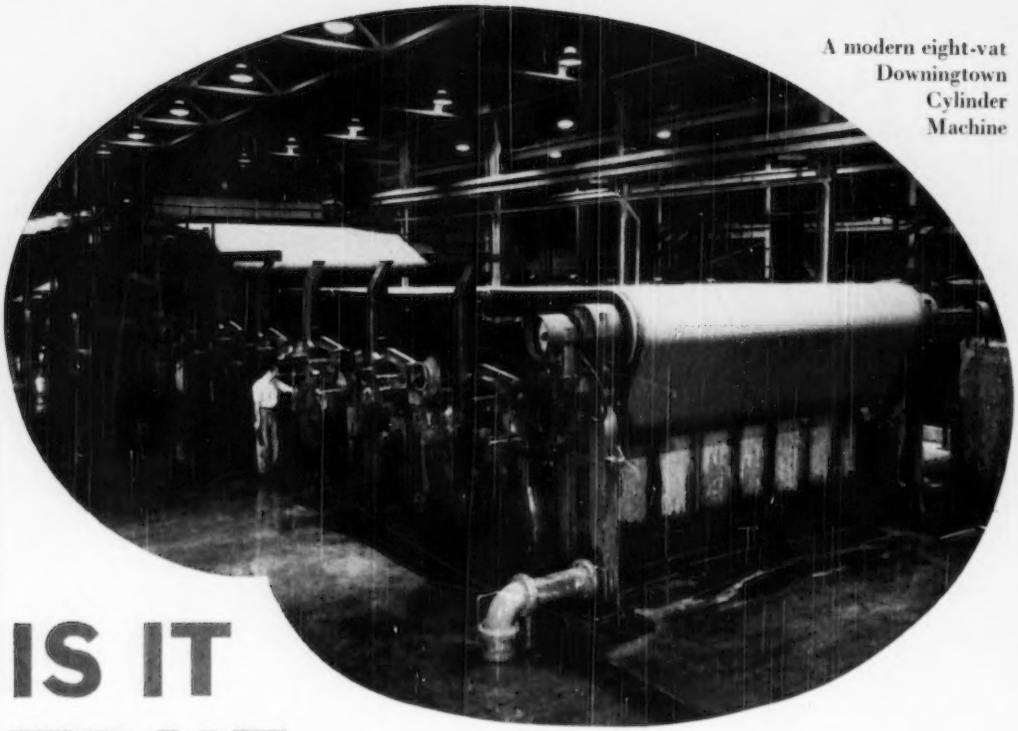

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DOWNINGTOWN, PA.

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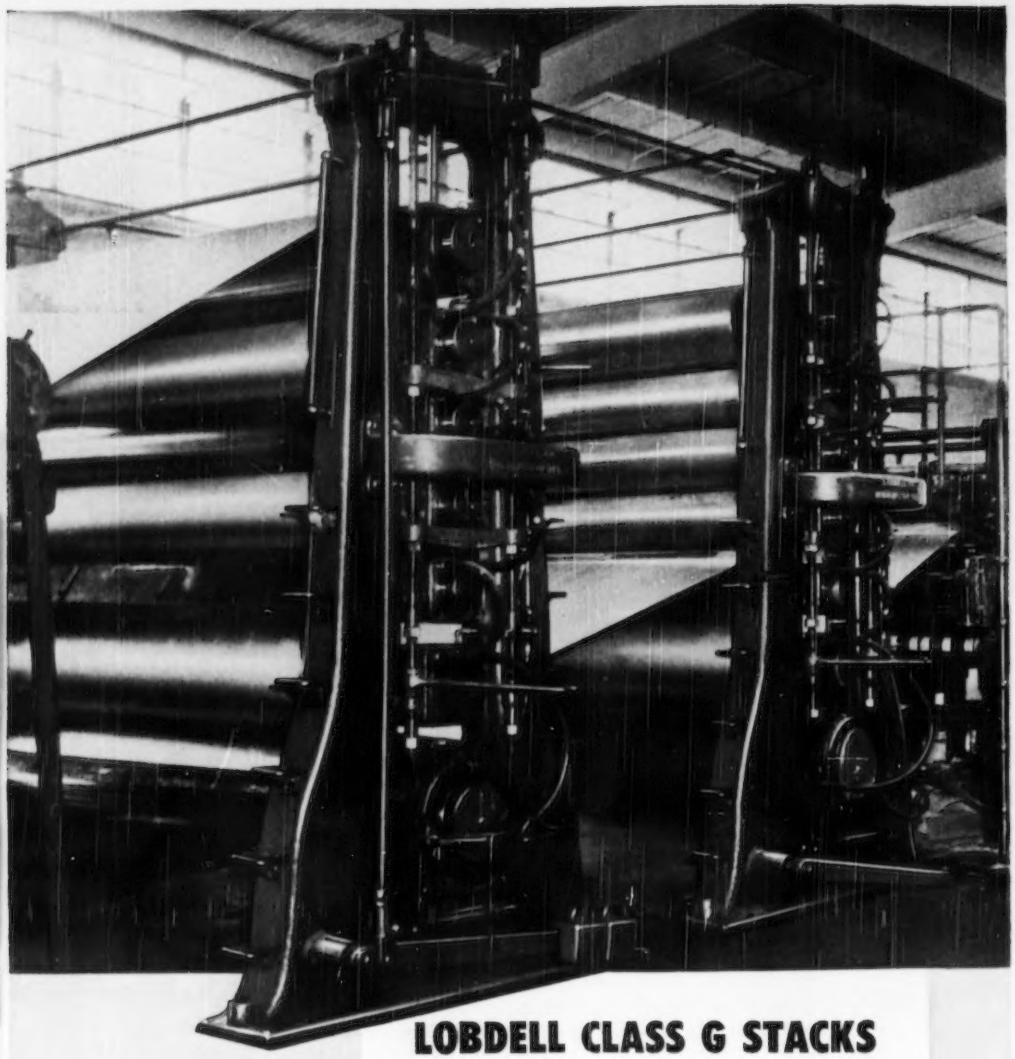

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Austell, Georgia

Twin Stacks to trim 92", Face 96" installed in 1948.

Complete with closed end bronze lined bearings, water cooled, sight feed oil lubrication, box type housings for heavy duty.

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Industrial Editor

Paper
TRADE JOURNAL

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Secretary

Vol. 131 **NOVEMBER 16, 1950** **NO. 20**

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DATES TO REMEMBER

NOVEMBER 24-25: American Physical Society, Div. of High-Polymer Physics, 8th Meeting, University of Chicago & the Museum of Science & Industry.

NOVEMBER 27:—DECEMBER 2: 19th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

DECEMBER 3-6: American Institute of Chemical Engineers, Neil House and Deshler-Wallick Hotel, Columbus, Ohio.

JANUARY 15-18, 1951: Plant Maintenance Show & Conference, Public Auditorium, Cleveland, Ohio.

JANUARY 24-26: Canadian Pulp & Paper Assn., Mount Royal Hotel, Montreal, Que.

FEBRUARY 19-22: Technical Assn. of Pulp & Paper Industry, Annual Meeting, Hotel Commodore, N. Y. C.

FEBRUARY 19-22: American Paper & Pulp Assn., Annual Meeting, Waldorf-Astoria Hotel, N. Y. C.

NEXT WEEK

Number VII in the corrosion series. This is the concluding installment of H. O. Teeple's article entitled "The Use of Nickel Containing Alloys in the Pulp & Paper Industry."

An informative description of the construction, together with some operating experiences of an important piece of stock preparation equipment will be found in "The Sutherland Single Rotation Disc Refiner" by Lionel M. Sutherland, Sutherland Refiner Corp., Trenton, N. J.

Several methods of coating paper on the paper machine are described in an interesting paper entitled "Coating Papers on the Fourdrinier and Press Sections" by C. W. Steele, Coating Supt., Combined Locks Paper Co., Combined Locks, Wis.

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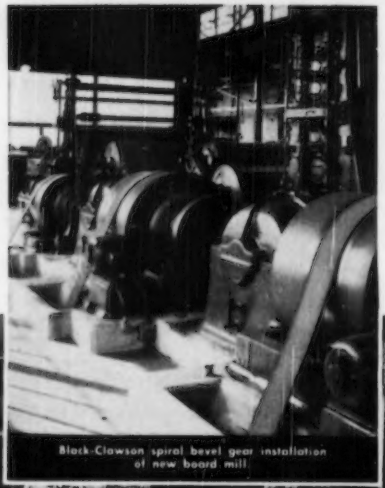
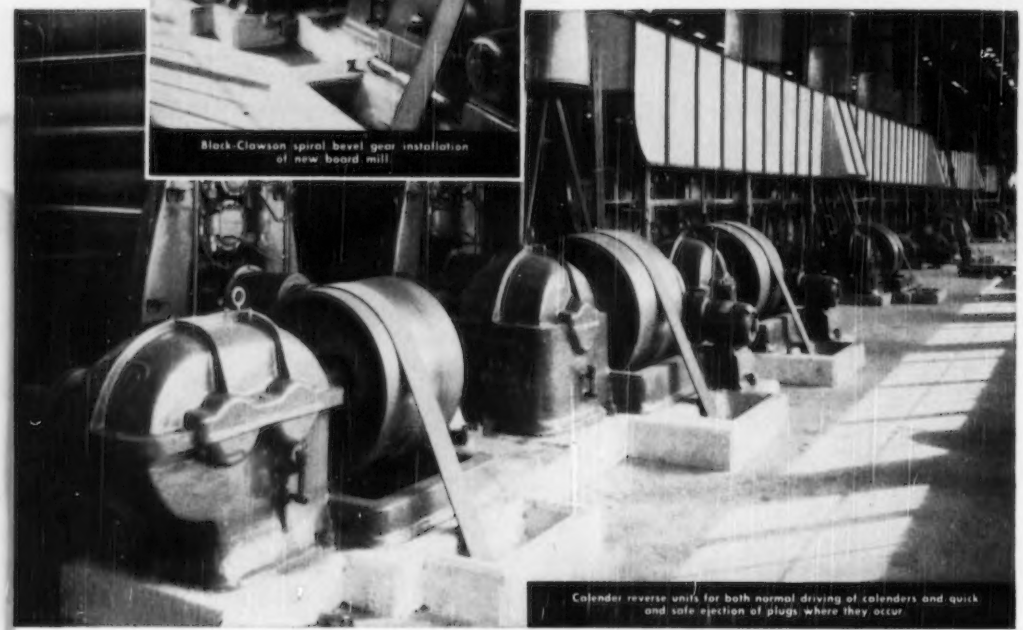


Black-Clawson spiral bevel gear installation of new board mill

The DRIVE
that really pays off



Calender reverse units for both normal driving of calenders and quick and safe ejection of plugs where they occur

Hitch your paper machine to the most dependable make of drives that money can buy and you will avoid many a shut down for repair and many a production loss.

There is no better drive in existence than the Black-Clawson—no more generally used drive—no more dependable drive.

B-C drives are exceptionally rugged. They're quiet. They're virtually vibrationless. They're easy to synchronize to the required variations in speed of the several sections of the machine—particularly new machines.

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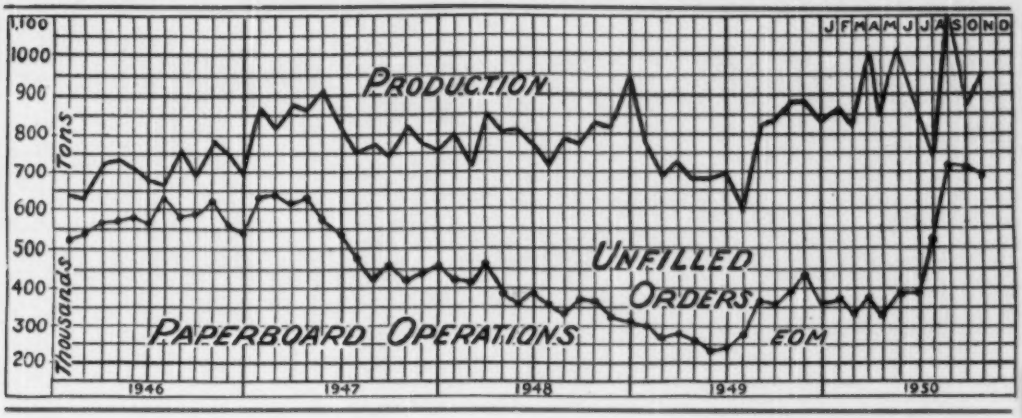
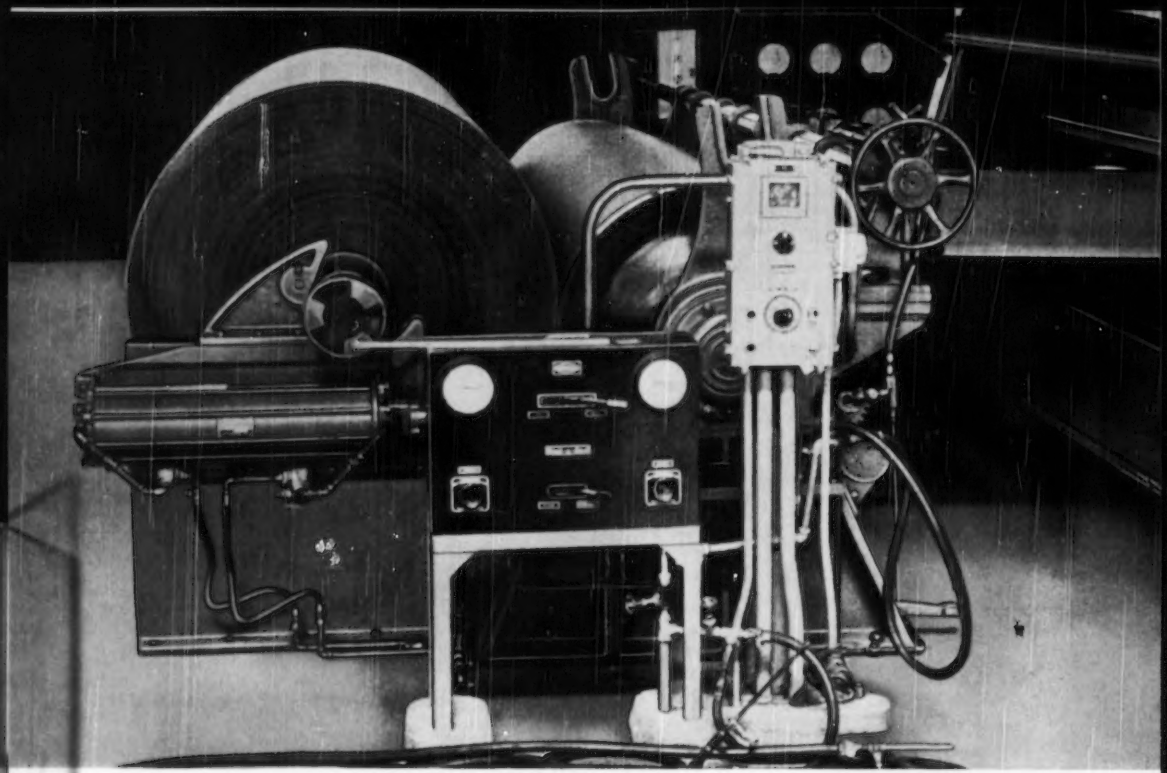
Weekly Brief of Important Figures

OUR BUSINESS



Source	Production	WEEK ENDING Nov. 4, '50	Oct. 7, '50	Nov. 5, '49
APPA	Paper Production percent 6-day Capacity	109.1	105.3	99.0
	Unbl. Kraft Paper Production percent	100.3	95.3	91.8
NPA	Paperboard Operating Ratio percent inch hours	102.0	100.0	92.0
		Sept. 1950	**August 1950**	**Sept. 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	766,000	833,805	699,796
	New Orders ....Tons	820,000	972,914	764,640
	Unfilled Orders ....Tons	932,000	886,969	463,553
	Shipments ....Tons	772,000	842,338	706,642
		Oct. 1950	**Sept. 1950**	**Oct. 1949**
NPA	Paperboard Production ....Tons	944,672	877,945	765,612
	New Orders ....Tons	931,828	872,012	803,535
	Unfilled Orders ....Tons	694,741	714,877	497,820
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	220	207	181
	Durable Mfg. Index	248	237	194
	Nondurable Mfg. Index	197	182	170
	Chemical Products Index	266	257	226
	Mfg. Food Products Index	188	177	189
	Printing and Publishing Index	161	150	143
ODC	Magazine Advg.-Printer's Ink Index	316	321	284
	Retail Sales Combined Adjusted Index	345.8	354.0	300.5
	Drug Index	225.9	221.2	223.9
	General Merchandise Group Index	347.3	369.2	294.5
	Grocery and Combination Index	404.2	410.9	360.8
	Prices Index			
BLS	Consumers Price Index[1]	173.0	172.5	168.8
	Wholesale all Commodities[2]	166.3	162.9	152.9
	Wholesale Foods[2]	174.6	171.4	160.6
	Commodities other than Farm Products and Foods[2]	155.3	151.5	145.0
	Wholesale Pulp and Paper[2]	163.9	159.9	156.8
	Purchasing Power of Dollar, Consumers Prices[1]	57.8	58.0	59.2
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	367.2	361.9	323.0
	Unemployment Compensation Initial Claims (M)	641	971	1,252
	Miscellaneous Carloadings–Thousands of Cars	1,574	1,433	1,365
	Electric Output (Million KW hr.)	33,874	31,626	29,551
PTJ	Average 32 P & P Common Stocks as of Nov. 6	$32.76	$34.26	$29.54
	Average Indicated Dividends Common Stocks as of Nov. 6	$ 2.49	$ 2.43	$ 2.13

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—September 1950 Estimated Figures
° Latest Month Available on Request



Puseyjones Improved Type Uniform Speed Reel with pneumatic adjustable loading mechanism.

Reel Changes Simplified

The role of the Reel in paper-making at today's high speeds is an important one. An inefficient, old-type Reel will hamper production, cause high "broke" and result in increased tonnage costs.

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Fabricators and Welders of All Classes of Steel and Alloy Products

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THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL, Wednesday, November 15, 1950.

Overall industry interest is not centered in the rises in newsprint prices, as would be supposed from the daily press, but in the expected dip in business and when it is likely to come, also in NPA moves to get Government requirements of paper and boards.

Price movement during the week was at a minimum. The market was fairly stable at the new levels. Exception to this of course is in the spot market for raw materials as also for wanted quantities of finished products which are now moving at "gray market" prices.

When, As and If A Dip?

Reasoning of industry economists was that a dip in demand would develop when the Korean situation cleared up and hoarders realized they had to use up the heavy stocks bought in the Summer. In other words, much of the phenomenal demand has been forward-buying which will at some time react on production.

Just when this will come will depend on international conditions. From the serious turn events have taken in Korea, China, and the rest of the world, prospects are that Korea is only the beginning. It is now held as likely that a new wave of buying may be initiated by those more conservative citizens who now see a wisdom in buying what may soon either not be available or be hard to come by.

Thus the dip will come when the housewife and businessman alike stop hoarding and draw on their stocks for daily needs. Should this come before demands of the defense program are fully active, then demand will temporarily ease.

These conclusions are believed to be true for soft goods, as well as paper. For durables which draw heavily on critical metals, it is the consensus that Christmas buying may well be heavy in view of current developments in Korea. Here again, demand will be in anticipation of shortages.

NPA Action Awaited

That NPA action to get Government requirements of paper and boards — both military and civilian-agency — is imminent is sensed from Washington statements to the daily press and the general quiet along the NPA front.

Reports from Washington hint that close to 10 percent of industry production is the wanted figure, rather than the 2 percent suggested by the Industry Council. (For report on the Council and its work with the Department of Commerce, its recommendations to NPA that the M-2-41 order — so successfully used in World War II — be adopted, see E. W. Tinker's statement to SAPI on page 12 of this issue.)

The serious problems which confront Government agencies in getting paper and board supplies, also described by Mr. Tinker, are known to be partly the result of unrealistic specifications which are slow in being corrected. Lacking agency understanding of paper tests, the outmoded specs. present Scotch-taped obstacles to getting necessary tonnages. Supplies being obtained through Washington brokers by Government agencies at "fabulous prices" are those produced for general commercial use and do not of necessity meet Government specifications. It is reported that much of the difficulty could be resolved by the Bureau of Standards.

There is a likelihood in view of this situation that Government DO's will start moving to paper producers as soon as NPA regulations are issued. Should this happen before requirements of Regulation No. 2 are modified to meet the special problems of pulp distribution, serious dislocation of pulp supplies would result, it is said by industry leaders. It is fervently hoped the long record of hearty cooperation between the Industry Council and the Dept. of Commerce will weigh heavily with General Harrison, and that its recommendation for the adoption of M-2-41 will be accepted before the DO orders start flowing.

Raw Material Briefs

Groundwood Pulp.— Water shortages in northeast Canada have cut heavily into groundwood output. Heavy demand has served to tighten supplies and to lift prices. November 1 quotations for Canadian contract tonnages are $75 and $80 delivered. Announcement is also made of an $85 price for December deliveries. Spot tonnages are being well received, it is reported, at prices well over contract prices. Available lots of U. S. grades move in the same ranges.

Casein.— Increased inquiry from U. S. and foreign buyers has firmed the Argentine market. The new season's supply is moving fast at higher prices, quoted in New York at 34¼/34½c. Domestic market also is stronger with light supplies and good buying interest. Prices are about 36/39c by grades.

Corn Starch and Dextrines.— Production is sold up and deliveries much behind schedule. Price advances of 15c are announced for starches and dextrines.

Sulfur.— Curtailment of use of stocks both here and abroad is adjudged imperative in NPA confidential report, if stocks are not to be dangerously depleted. Recommendations by the NPA expert include switching to use of sulphides or pyrites, investigation of newly-discovered deposits, and development of by-product sulfurs from waste gases and other materials. The report states that above-ground reserves will be about 2,300,000 tons on December 31, slightly more than half the December, 1939, reserve, when the U. S. had a 27-month supply.

Twines.— Serious shortages of raw fibers and uncertainty surrounding supplies have hit hard-fiber tying twines. A leading producer has announced a new rise of 1½c a pound in sisal tying twines, effective November 8. All orders are subject to delays in shipment, quantity cuts, and to price prevailing at time of shipment.

Caustic Soda, Chlorine, Soda Ash.—

WASHINGTON — Barring unforeseen large new demands for soda ash and caustic soda, little difficulty is expected in supplying both military and other requirements for the immediate future, NPA officials were advised by their Alkali-Chlorine Industry Committee at a meeting last week.

The committee recommended, however, that steps be taken to develop a plan to distribute DO-rated priority orders for caustic soda, soda ash and chlorine equitably among domestic producers of these chemicals. Such a plan, they suggested, would follow the general pattern of similar orders already in effect covering handling of DO's for steel and aluminum.

NPA representatives indicated they will consider these recommendations, and two separate task groups were appointed, one covering caustic soda and soda ash producers and the other chlorine production, both to work with NPA in assembling the necessary data for the proposed order.

Factors which will be considered will include present and anticipated impact of defense orders on the industry, present total production capacity and prospects for increased production. In giving their estimate that the present supply and demand situation is in better balance than for chlorine, the committee recalled that during World War II, it had not been necessary to place soda ash and caustic soda under direct allocation. It was agreed by both Government and industry spokesmen that a large program to expand aluminum production, or any similar large expansion, would result in sizable new demands for alkali.

Opinion was expressed that the DO rating system is causing some confusion and disruption of regular customer relationships in the industry, and NPA spokesmen acknowledged that currently some producers may be getting an unduly large share of DO orders. Under such conditions, a distribution system such as was recommended would be helpful, it was conceded.

— E. P. N.

Paperboard Production (Tons)*

	Nov. 4 1950	Oct. 28 1950	Nov. 5 1949
Production	236,142	240,123	203,035
New Orders	321,394	221,590	275,815
Unfilled Orders	774,891	694,741	469,423

Source: NPA.

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News of the Week

Paper TRADE JOURNAL

ONTARIO'S NEW MILL

OTTAWA—Although the parent company is not revealed, a $7 millions groundwood and sulphite mill is projected for Sarnia, Ont. It will be part of a $24¼ millions project which also includes a $9 millions paper mill across the river at Port Huron, Mich. A United States company is said to be behind the paper mill project. A wholly owned Canadian subsidiary, Premier Pulp and Paper Co., Ltd., which was incorporated early this year with a capital of 2,500,000 shares par $5 and which will likely handle all Canadian operations.

It is understood plans have not yet been completed. Work is scheduled to start next March or April on the $7 millions Sarnia mill on a 45-acre site at Point Edward near the Blue Water Bridge. It will have an annual capacity of 18,600 tons of sulphite pulp, 48,000 tons of groundwood pulp and will employ 350 people at least. At Port Huron across the river on the American side, the parent company will erect a $9 millions mill, starting with two paper machines with a combined capacity of 62,000 tons a year of catalogue and directory paper. Plant capacities on both sides of the river could be doubled, it is reported, if this should be desired.

The pulps produced in the Canadian mill will be pumped, in slush form, across the river on a flume suspended from the Blue Water Bridge or through a pipeline below the river for processing at the Port Huron mill. This procedure will save the United States customs duty since, in slush form, the pulp can cross the border free of duty, while in finished paper form there would be a duty to be paid.

Pulpwood for the project will be brought from 800 square miles of limits south of the Canadian National Railways from Gogama to Peterbell, northwest to Sudbury and Capreol, and approximately 95 percent of the wood will go to Sarnia by rail, with between 1,000 and 2,000 men being employed in the woods and some $3 millions being spent for its woods management plan.

PROCUREMENT AUTHORIZATION

WASHINGTON—Pulp, paper or paper products exclusive of newsprint, authorized for procurement by ECA last week included $3,050,000 to be spent in the United States and Canada for supplies for Western Germany. The terminal contract date is August 31, 1951.

ST. REGIS EXPANDS

St. Regis Paper Co. announces plans for the early construction and installation of two kraft paper machines and pulp manufacturing facilities. One will be added to the company's "Kraft Center" at Pensacola, Fla., with the second to be a new mill which will be built at Jacksonville, Fla. They will be fully integrated with pulp manufactured from wood from the company's owned or leased woodlands. This expansion program will entail the expenditure of approximately $30 million.

The new capacity, the announcement states, will make available paper to replace the multiwall bag paper now produced at the company's northern New York paper mills from pulp imported largely from the Scandinavian countries and Canada. This expansion in the South will make possible substantial economic benefits through utilization of the company's own wood for the manufacture of pulp in an integrated operation, the company states.

The company adds that it does not anticipate, as a result of this development, a curtailment or cessation of operations of those kraft paper mills in northern New York, but rather a concentration by them in the manufacture of specialty paper products made largely from bleached and unbleached kraft pulp.

The new paper machines, with a capacity of approximately 225,000 tons of kraft paper per annum, will supplement St. Regis' present Southern capacity at Pensacola for making kraft paper and board.

A substantial part of the output of the new Southern capacity will be required for the production of specification kraft paper for the manufacture of multiwall bags by St. Regis and its customers for such paper. The company reports that it also plans to convert a larger portion of its production at Pensacola to bleached kraft paper and board for food containers.

This expansion, it is stated, represents an important part of a long-range program projected by St. Regis that has as its aim complete integration of the Kraft Division, in anticipation of which the company has over the years acquired a permanent supply of wood resources in Florida, Alabama and Georgia.

St. Regis said that the rapid trend of industry and agriculture to the multiwall shipping sack has forced important increases in productive capacity for making kraft paper over and above that demanded for other uses by normal population growth.

Charles R. Hook, Chairman of the Board of Directors of The American Rolling Mills, presenting E. E. Grant, President of The Crystal Tissue Co., with a silver medallion for his services as President of the Middletown Civic Assn. for the years, 1948, 1949, and 1950.

LESAVOY BUYS GRANVILLE

NEW YORK — I. Lawrence Lesavoy announced at his office, 350 Fifth Avenue, that he has purchased a paper plant at Newark, Ohio, and that in about a month he will have it in operation, turning out a hundred tons of newsprint daily. The mill will ultimately have a capacity of 300 tons per day. This plant, which has been closed for a year and a half, was formerly operated by the Granville Paper Co.

COOPER BUYS FRONTENAC

WATERTOWN, N. Y.—The sale of the Frontenac Paper Corp. property and the Frontenac Hydro-electric Co. water power development at Dexter by the Dexter Sulphite Pulp and Paper Co. to the Abe Cooper - Watertown Corp. for a combined price of $70,000, was consummated after more than six months of negotiation.

Mr. Cooper has not decided what use he will make of the paper mill property, but there is a strong possibility that he will carry out a long cherished desire to develop an experimental paper mill there to test out new ideas in the development of papermaking machinery.

CHARGE PRICE FIXING

Representative Emmanuel Cellar has called on Attorney General McGrath to institute proceedings for alleged price fixing by newsprint manufacturers. The recent price changes vary from $6-$10 per ton are given as the reason.

Tinker Discusses NPA Controls

Tells SAPI's of Government Needs

NEW YORK — Paper and board requirements of military and civilian agencies of the U. S. Government are not being met. It is natural that producers be reluctant to divert production from regular consumer demand to meet government needs, E. W. Tinker, executive secretary of the American Paper and Pulp Assn., said here last week.

Speaking to a record-size group of New York SAPI's and guests meeting at the Hotel Beverly for their first luncheon of the season, Mr. Tinker laid foundation for an open meeting by telling of the Industry Council's work with the Department of Commerce and NPA to bring order out of the current confusion. The situation is held to be born out of the impact of the so-called rearmament program and civilian hoarding on an industry which was operating at record production to meet consumer requirements. Pulp and paper have been recognized as essential commodities and are subject to the Inventory Control Order.

Major concern of the APPA and the Council is that Regulation No. 2 may serve to dislocate pulp distribution throughout the country. Under its definitions, a firm which accepted a DO order fer paper or paperboard could place an order with a pulp mill and require that the necessary pulp be supplied. The order is extremely involved, Mr. Tinker said, and the Industry Council has asked to have it amended. No action had been taken by General Harrison up to this time.

An unfortunate situation is developing in Washington as a result of industry inertia in supplying Government needs. "Orders are being placed for paper and board by brokers, and prices, according to reports, are out of line in many instances which, in the long run, will reflect to the discredit of the industry," Mr. Tinker warned.

"The Industry Council has been trying to convince Washington that imposition of a modified M-2-41 regulation used in World War II would insure equitable distribution and adequate supplies to meet civilian and military agency needs without disturbing production. If some modified procedure is not adopted within 30 days, I would say that we are going to have confusion confounded, and there is going to build up a framework for paper distribution that will reflect discredit on those responsible."

Mr. Tinker explained to the SAPI's and to the many merchants present that under M-2-41 the companies report the percentage of Government business they have taken. If it is below the required percentage, NPA authorities could tell them to take certain orders. He also stated that General Harrison had told the Industry Council the present regulation covers a pilot plant order which he hoped would be accepted for the next 60 or 90 days.

Asked in the open meeting which followed how the 2 percent figure was arrived at and whether it was the ultimate of Government requirements, Mr. Tinker said that the figure was an average only and that it would vary greatly, and that it might grow very rapidly with war conditions.

Stan Styles, Assistant Secretary of the NPTA, addressing the gathering said:

"In normal times or during any critical period, the paper distributor or merchant is an indispensible link between production and consumption. He is the one medium which functions for and expedites the free flow.

"No one questions the outstanding record of the paper distributor during the last crisis despite the fact that he was practically by-passed during the formative stages of the program. Even with a late start, the distributor overcame nearly every obstacle and carried through with a high degree of service and accomplishment for the requirements of the governmental services and civilian needs.

"Today, because of study and preparation, I feel that the paper distributor can be in the picture and take his rightful place as an important cog in the policy and organization of a defense effort. He can give wise counsel and assistance.

"(1) By continuing to utilize to the fullest practical extent their warehouse facilities to cushion the domestic economy against any or every untoward development or occurrence in the uncertain period ahead.

"(2) By maintaining and providing for an uninterrupted flow of the available merchandise throughout the entire country during any crisis.

"(3) By allocating scarce merchandise equitable so that both large and small users alike may be enabled best to serve the consuming public.

"(4) By using the means of thousands of personnel employed and through their families to discourage hoarding and scarce-buying.

"(5) To convince the public of the stability of the national economy and the absence of any forseeable scarcity of paper and thereby aiding in checking hoarding at its source.

"(6) To seek with governmental cooperation to avoid and discourage unwarranted price increases and inflationary trends.

"(7) To offer or recruit experienced distribution specialists to aid in expediting the national security effort.

"(8) By placing at the Government's disposal the velocity of quick distribution of goods and literature by personnel to thousands of customers thereby aiding the speedy mobilization of the paper business for the national security effort."

An enthusiastic crowd of 130 overflowed the Victorian Room into the dining room below. Some 50 were either turned away at the door or were refused last minute phone reservations.

FIGHTING PAPER WANTED

Invitation for bids has been issued by the New York Quartermaster Procurement Agency, 111 East 16th street, New York 3, N. Y., on QM-30-280-51-686, covering Paper, Mimeograph, 25 percent rag, Substance 20, sizes 8″ x 10½″ and 8″ x 13″, 18,400 reams: and Paper, Mimeograph, Chemical Wood, substance 20, sizes 8″ x 10½″, 8″ x 13″, and 17″ x 28″ (various colors), 8,800 reams. Bids will be opened November 21, 1950, at 11:00 a.m. (EST) at the New York office. Delivery schedule: To be completed by November 30, 1950. This procurement is for the U. S. Navy.

QM-30-280-51-649, covering Item 1—Board, Bristol, Smooth, 25% Rag or 100% Sulphite, White, 3 Ply (Pasted) Basis 22x30-360/1000, Size 22x30,—500,000 sheets; and Item 2—Board, Bristol, Smooth, 25% Rag or 100% Sulphite, White, 4 Ply (Pasted), Basis 22x30-480/1000, Size 22x30″,—200,000 sheets. Bids will be opened November 29, 1950, at 11:00 a.m. (EST) at the New York Office. Delivery Schedule: Complete by December 31, 1950. This procurement is for the U. S. Army.

PULPWOOD FOR BRITAIN

OTTAWA—Britain is reportedly planning to spend an extra $25 million in Canada and a goodly part of this is expected to be for pulpwood orders which are likely to be increased, though in some circles there is doubt now whether supplies would be sufficient for any large increases in demand. Sales are already said to be as large as the forest operators would like them to be under current conditions.

Newsprint Price Atmosphere in Canada

OTTAWA—In view of what has been insinuated by the Cellar Committee in Washington about Canadian newsprint companies and the several price increases already announced by some Canadian newsprint manufacturers as well as strong rumors that other higher prices for such Canadian products may be forthcoming shortly, it can be reported now that considerable misunderstanding is beclouding the newsprint price atmosphere, particularly in the United States. Reports reaching here indicating that some United States publishers consider the latest price increases as "ill-timed, excessive and unwarranted," are not backed up by observations and opinions in Canadian pulp and paper industry.

What is even more important at the present time is that newsprint prices may go up even higher than at this period. If the cost of production continues to rise as expected in well-informed quarters, newsprint prices may exceed the $10 increase in some instances, and, therefore, since there is strong complaint against the already announced price increases, it is urgent that the whole price atmosphere should be cleared up.

In the first place, report after report here indicates that there will be a greater demand for Canadian newsprint in 1951 than in 1950 and this will not help to keep prices down. Already rumors are going the round that customers both in the United States and elsewhere are so anxious to get more Canadian newsprint that the present market price may be topped as inducement. However, to the credit of Canadian producers, it is known that established clients in both the United States and Canada are getting the preference over any "new" customers, even if the latter would probably offer at least temporarily larger profits for the producers. This is something which is not getting proper publicity and it should be known better to appreciate the Canadian supplier's position. Indeed, there seems to be a definite trend to send as much newsprint to the United States as possible on the part of Canadian producers in order to help the exchange position. This trend is even arousing some criticism in Canada because it is charged that Canada is depending too much on the United States market for this important export, and while the supply position is tight for newsprint in the world today, this is the proper time to divert such supplies elsewhere in order to build up a more diversified market and not lean almost completely on the vagaries of the United States market.

In face of this growing criticism at home, Canadian producers are continuing to ship as much newsprint as possible across the border to United States customers. This fact in itself is arousing more and more resentment in the Canadian industry when the latter is criticized for current price trends or as supposed combine.

In the second place, it is evident here that there is no clear understanding in the United States that Canadian publishers have to pay an 8 percent sales tax on newsprint which raises the price unduly for the Canadian consumers so that, in actual practice, when Canadian producers increase the price of newsprint, Canadian customers pay more in the long run than the United States customers of the same mills because the United States has no such tax obligation. In other words, the Canadian newsprint price is not determined in any discriminatory way against United States customers.

In the third place, insinuation in the United States that some sort of evil combine exists in the Canadian newsprint industry is not logical, nor correct, judging from close observation of the industry, its leaders and the operation of the legal machinery within Canada to guard against just such conspiracies. If an illegal combine had existed in the pulp and paper industry up to now, it would have come out because the Combine Investigation Act allows for such probes where warranted. Thus, nothing has been said in Ottawa, where the Combine Investigation Act officials have their headquarters, though, of course, if any such probe is actually under way, there would be no disclosure. But up to the present, there has been no official or unofficial suggestion of such a combine existing and functioning in the newsprint industry so that mere insinuations have to be ignored unless they are backed up properly.

In the fourth place, Canadian newsprint manufacturers are estimated to be operating in 1950 at the annual rated capacity of approximately 5,226,000 short tons compared with 5,113,000 in 1949 and the annual production is likely to be about 5,271,000 tons in 1950 as against 5,176,000 in 1949, with a gradual increase both in rated capacity and production being recorded for the past several years. In fact, since 1946, the operating percentage has been over 100 mark and indicates the strenuous efforts being made by the Canadian mills to increase output of newsprint as much as facilities will allow. Manufacturers have increased the capacity of their mills by over 600,000 tons since the end of the war by installing new machines, speeding up existing machines and otherwise adopting measures which have allowed them to produce more newsprint than their rated capacity. Investments in such programs have been reasonably heavy and as risky as common sense combined with past experience would permit. Investing millions of dollars in such programs must not overlook the fact that many Canadian producing firms were forced into receivership in depression days and most newsprint companies were actually losing money on their operations in those days when United States demand dropped sharply in the 1930's. Consequently, there is no assurance that the present unprecedented demand of United States customers is a permanent development. It may be just temporary. At least, bearing in mind the present costs of construction and other inflationary tendencies, which affect all industries and their current policies on expansion, backers of Canadian newsprint producers must be careful in formulating long-range programs.

In the fifth place, costs of production for the Canadian newsprint companies are rising beyond all expectation. Wages now average $39.04 as compared with $36.04 only a year ago and hourly earnings now average 91c as against 85c last year, according to the latest official figures of the Canadian Government for the paper products industry, with payrolls standing at 307.2 compared with 273.6 a year ago, on the base of June 1, 1941, being 100. On top of this, there is such a growing demand for manpower in Canada today that shortage of labor may force such costs even higher during the coming months at a time when the requirements of manpower may be increased due to the fact that the defense program of the Canadian Government may take up the services of countless thousands of workers just when the pulp and paper companies are planning expansion of operations this winter.

In addition, it is an open secret in Ottawa that freight costs may rise if the railways and their workers are forced to accept the ruling of a compulsory arbitration official which appears now a certainty. If higher wages are awarded to the workers, the railways have already hinted that they would be compelled to ask for higher rates. This, of course, would again bring up the costs for newsprint producers in various parts of Canada.

With the Canadian Government embarking on a heavy spending program for defense this year, tentatively termed the heaviest spending program of any peacetime year in Canada's history, there is no doubt that Canadian corporations like those producing newsprint may be faced with much heavier tax burdens which in themselves are not encouraging factors for expansion of a costly nature, nor for lowering prices of products.

When considering current newsprint prices, it must not be forgotten that the price moved up from $50 to $84 by United States Government author-

ty between 1943 and 1946, with American publishers at the time showing an anxiety to raise the price in order to encourage greater supplies by Canadian producers. Since such U. S. price control went off in 1946, another $16 was added and the last increase was in the late summer of 1948 until the recent upward adjustment. The boosts since price controls were eliminated have been founded solidly on proportionate higher costs of operation, including higher wages, freight charges, imported chemicals from United States as well as those produced in Canada, and other expenses, with all signs pointing to still higher production costs in 1951. A survey of major Canadian newsprint companies conducted by the Newsprint Association of Canada shows the following for 1949, with 1948 figures being in brackets and the indexes based on 1935 being 100: Mill labor per ton newsprint, 268 (250); wood per ton newsprint, 359 (336); Canadian prices, delivered at New York, 250 (240). Obviously, the costs have increased, and, while it is true that Canadian newsprint companies are now in better financial health than in the 1930's when many such companies were in receivership and almost all were losing money, it is also true that present prices are not out of tune with costs of production and a reasonable return for risky capital investment, especially when it is emphasized that expansion programs, modernization plans and other sound management activities are accounting for much of the profits currently being made from such operations.

Finally, there is much misunderstanding arising out of the latest series of announcements by several Canadian newsprint producers of somewhat similar price increases so that this appears to be conforming to a set pattern or regimentation of price-fixing arrangements, helping a false opinion to develop among those who rely on evidence derived from sources other than personal knowledge. Of course, this is completely wrong, according to Canadian producers since it is, in reality, competition itself which makes these prices so similar amongst the major producers, with the United States tariff regulations being responsible to a large extent for the similarity of product and price because the tariff determines actually what can enter the United States duty free as "standard newsprint." Naturally, the Canadian producers must produce similar products at somewhat similar prices to get within the United States regulations which cause products of this kind to be alike in quality, even if different in other respects for the individual United States customer. This is something which must not be forgotten if an honest opinion is to be formed on why prices are so similar for Canadian newsprint sent to the United States customers. There is nothing mysterious and enigmatical about this similarity of prices of newsprint shipped to the United States any more than the cost of bread and other essential items which are usually similar, particularly when unions determine similar wages, railways determine similar freight charges, governments determine similar tax burdens, and other similarities exist. In any old major industry in Canada, producers are faced with the same problems and use the same methods of solution on prices as in the long-established newsprint industry, though generally less criticisms are heard because of similarity of prices.

MacMILLAN IMPROVEMENTS

Involving expenditure of about $900,000, the sawmill of the H. R. MacMillan Export Company Limited at Chemainus, B. C., has been extensively modernized and reconstructed. The mill will be an important unit in supplying pulp chips for the new mill opened by the company at Harmac, near Nanaimo, B. C.

The hydraulic log barker and the pulp wood chipper plant both have gone into full production at the Chemainus mill. These two new units combine to make the most important and expensive project in the history of this mill.

The log barker, an ingenious machine, was designed by H. A. Simons, who was the consulting engineer for the company's new pulp mill near Nanaimo. The hydraulic barked strips all bark from logs entering the mill.

To visualize its action, picture two rotary-type lawn sprinklers, one head up, the other head down, and both heads held a few inches apart. If a stick passed slowly between the two heads, bark on the stick would merely be washed, but a log passing through the barker at the rate of 60 feet per minute is stripped clean of bark by a water pressure of 1,550 pounds per square inch, which the plant applies.

Some advantages offered by clean, bark-free logs are: a cleaner mill in which to work, more efficient sawing of logs, less damage to saws; and most important of all, "waste" wood from these clean logs will now be used in the making of pulp. The aim of H. R. MacMillan Export Company Limited, to use every pound of solid wood in every log, has become a reality in daily operation.

Water is supplied to the barker by a six-tage pump driven by a 2,000-hp. steam turbine. Two thousand gallons per minute at the stated high pressure are required to strip the huge logs of their bark covering.

The recently completed chipper plant houses two 10-knife machines which chip the sawmill's clean wood waste into sizes as required by the pulp mill.

Building construction and machine installation for both barker and chipper plants were done by Chemainus mill employes under the supervision of Dave King.

Another big project now well underway is the replacement of eight 25-year-old blower type dry kilns with modern kilns and the installation of new stacker equipment.

It is pointed out that the modern cross-circulation type kilns now being erected on the site of the recently demolished old-timers will permit improved air flow, accurate temperature control, more efficient stacking methods, lower steam consumption, elimination of cracked and checked lumber, faster drying.

Kiln construction is being handled by General Contracting Co., with Herbert Fryer and Robert Cruickshank in charge.

Heat is produced by new copper fin-type steam coils and the all-important pressure gauges and indicating controllers are supplied by the Foxboro & Taylor instrument companies. It is expected that the first section will be in operation by mid-October and the others by the end of 1950.

Extensive repairs are being made on the deep-sea dock at Chemainus and many improvements have been made in the road system within or adjacent to the mill area.

NEWSPRINT FROM ALGERIA?

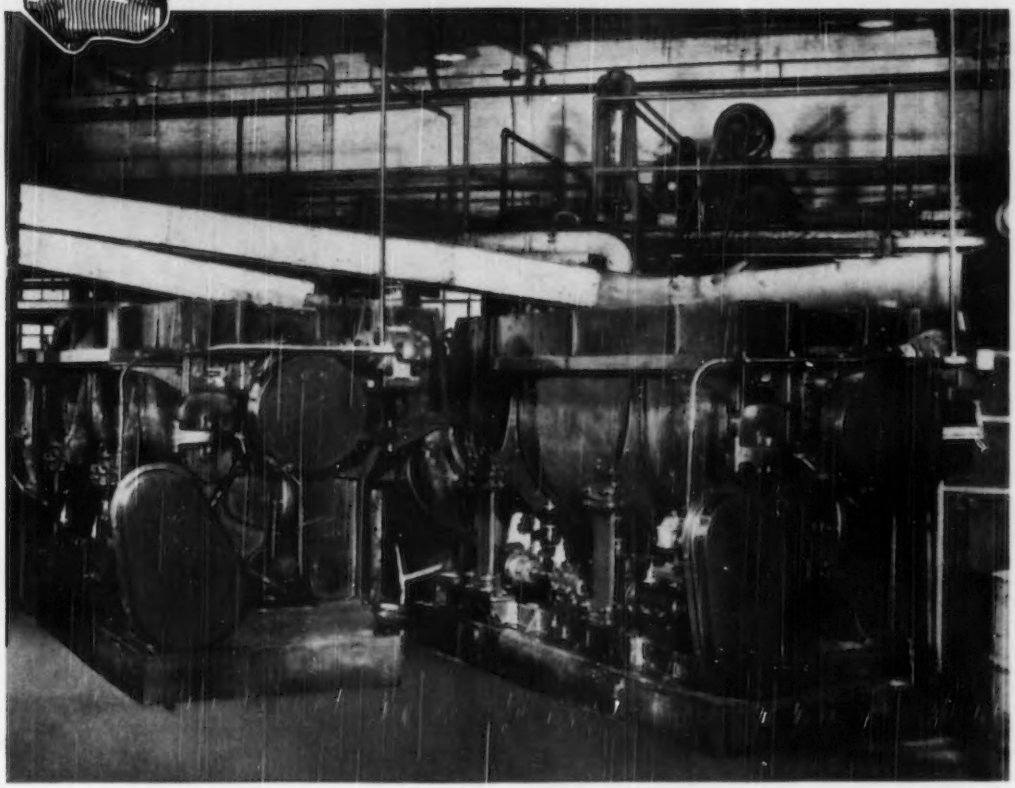
WASHINGTON, D. C. — Large-scale development of paper production in Algeria, using both esparto grass and proposed eucalyptus tree plantations, is recommended to aid in meeting the European shortage of newsprint and paper pulp, by Joseph E. Atchison, chief of the ECA pulp and paper branch, following a recent on-the-spot survey in that country.

Mr. Atchison urged broad expansion of both esparto grass and eucalyptus plantations in Algeria, together with increased facilities for their conversion to high-grade pulp and paper. He pointed out that for many years eucalyptus has been utilized in Australia for production of high-grade kraft paper, book paper and newsprint.

"The possible use of eucalyptus as a source of newsprint, which is in very short supply all over Europe, is especially important for future development," said Mr. Atchison. "The development of a newsprint industry based principally on this tree could become of great importance to all of western Europe, just as it has to Australia."

He expressed deep interest in the Papeterie-Cartonnerie Moderne, near Algiers, which he visited. This mill, he reported, now has under way an expansion and modernization program which will enable it to process eucalyptus as well as esparto, wheat straw, and waste paper; he also had high praise for Algeria's largest paper company, Compagnie Nord Africaine de Cellulose, which is operating a new plant near Algiers, and which he said is "the most modern plant in the world" for production of pulp and paper from agricultural residues.

YOU CAN MAKE MORE PAPER
with BIG, MODERN
BIRD SCREENS



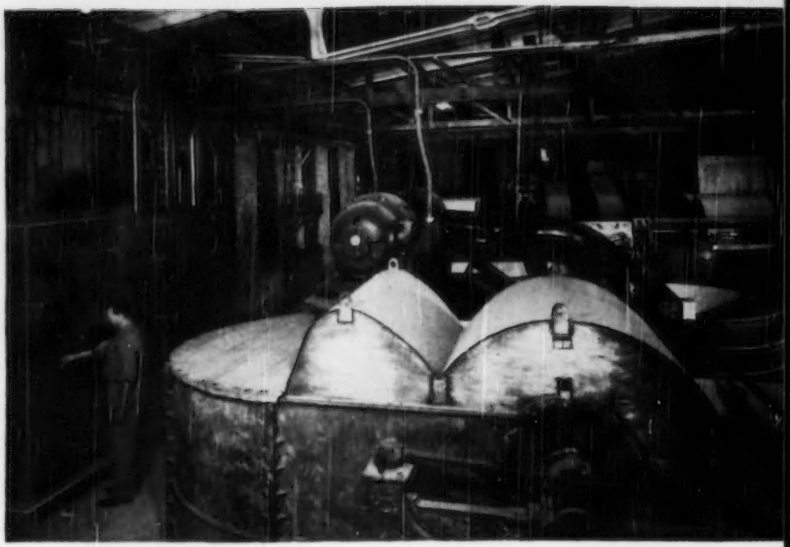
— Screens that have the capacity to deliver stock up to the limit of the paper machine to take them.

— Screens big enough to employ the finest screen slots for the given grade and yet provide the gentle, efficient screening action that means clean, well combed stock, uniform in weight and free of lumps, strings and slime.

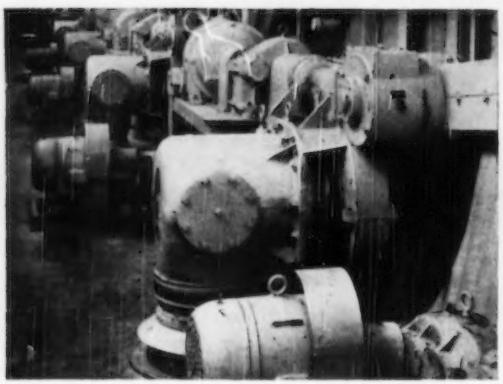
Look to your Screens. Don't let them be the bottleneck that holds back needed production.

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

TEAMED TO BEATERS!
In the Lee Paper Co. mill at Vicksburg, Mich., these beaters are driven by G-E wound-rotor induction motors, supplying the high starting torque required to dislodge settled stock. At left, an assembly of G-E Cabinetrol* centralizes low-voltage motor control in compact units, factory-assembled for lower installed cost and metal-enclosed for better protection and appearance.



Teamed to pay off at



TEAMED TO WASHERS! In the Fibreboard Products, Inc., mill at Antioch, Calif., G-E speed variators (top), enclosed and separately ventilated, give economical, adjustable-speed drive for this multi-stage kraft washer. The floor-mounted G-E totally enclosed, fan-cooled induction motors driving the repulpers between stages are protected against corrosion, water, fumes, dirt and dust.

TEAMED TO REFINERS! In a southern pulp and paper mill, these G-E 300-hp 2300-volt synchronous motors driving refiners are controlled by a lineup of G-E Limitamp* controllers at upper left. Providing high interrupting capacity at minimum cost to protect high-voltage motors, Limitamp prevents costly repairs due to short circuits, safeguards the paper-mill's production continuity.

*Registered Trademark of General Electric Company

GENERAL ELECTRIC

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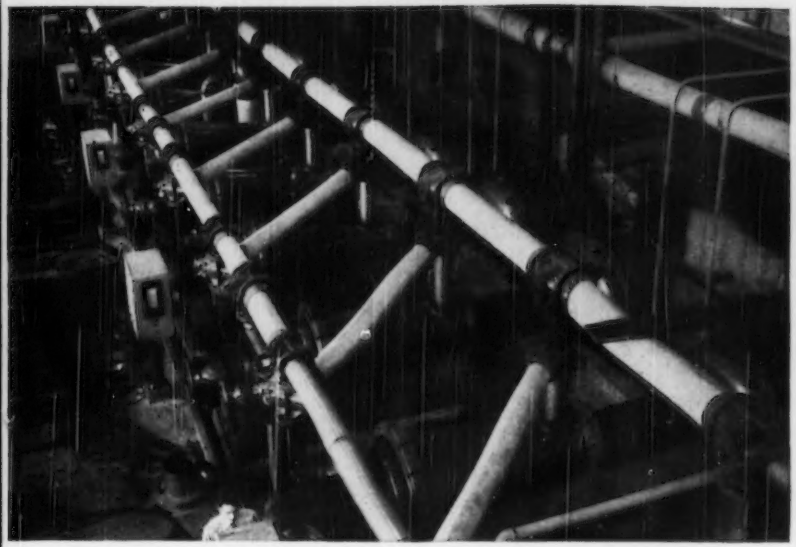


TEAMED TO JORDANS!

In the St. Regis Paper Co. mill at Tacoma, Wash., a battery of Jordans is driven by G-E synchronous motors. Advantages of these G-E Tri-Clad* motors include reliability, high efficiency, ability to improve mill power factor, and constant speed regardless of load. Dependable in operation, they're made by G.E. in low and high speed types, with various enclosures to meet paper-mill conditions.

your paper machine!

G-E equipment and services for pulp processing help maintain continuous production of uniform-quality stock

Teamed up with your stock preparation equipment, dependable General Electric drives reduce production interruptions, help assure uniform-quality stock. That means higher output at the paper machine!

You get the right drive! You may choose motors or turbines, constant speed or adjustable speed, from the wide G-E line. Thus you get the right drive for your pumps, beaters, refiners, agitators, washers, etc. . . . the proper enclosure for every paper-mill condition . . . the most economical voltage level . . . and the right control, full or reduced voltage, individual starters or centralized assemblies for lowest installed cost.

You get equipment plus! When you turn to General Electric, you get far more than fine electric equipment. You benefit from skilled engineering help on application problems—constant pioneering in new ways to cut paper-mill cost electrically—quick service from any of 30 service shops to keep your mill on the go—co-ordinated selection, manufacture, and shipment of electric equipment to simplify ordering, save your engineers' time, meet your construction schedules. That's why it pays to call in your G-E representative on your mill modernization plans. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

APPARATUS

—to help cut costs in stock preparation!

Forest Products Institute Meeting

OTTAWA. — Representatives of the pulp and paper industry, forest industry, universities, federal and provincial governments, and others took part in the two-day proceedings of the first annual convention of the Forest Products Institute of Canada October 30 and 31, with the program arousing considerable interest among the large number of delegates and including a presidential address, delivery of 16 papers by exports, technical sessions, banquet and visits to the Canadian Government Forest Product Laboratories as well as the Fibreboard and Plywood Plants of Canadian International Paper Co., Ltd., at Gatineau, Que.

The Institute was organized earlier this year to facilitate the interchange of information among all those individuals and corporate organizations whose interest bears either directly or indirectly to the field of forest utilization.

Douglas Jones, Executive Secretary, Technical Section, Canadian Pulp and Paper Assn., addressed the gathering on "The Value of Trade Associations to Industry."

Mr. Jones stated that he was sure there would be no time-consuming duplication of effort by the establishment of the Forest Products Institute of Canada and the existence of the Canadian Pulp and Paper Assn., stressing that "there will be active liaison on matters of common interest to our two association."

Col. J. H. Jenkins, Chief, Forest Products Division, Forestry Branch of the Canadian Government's Department of Resources and Develoment, Ottawa, told the gathering about "The Development of Forest Products Research in Canada," underlining the importance of the forest products industry in the Canadian economy. "More than one-tenth of all Canadian salaries and wages is derived from forest," he said, indicating that 60 percent of the area within provincial boundaries is forest land and of this, about half or some 660,000 square miles, is classed as productive forest, of which about 44 percent is merchantable timber.

"In view of the great importance of the forests to the national economy of Canada, it is essential that their productivity be maintained at high level and that the competitive positive of timber products be strengthened in world markets," Col. Jenkins stated. "The cutting out of accessible stands of virgin timber, the cutting of an increasing volume of smaller 'second-growth' timber, and the active competition from other materials will make difficult the continuance of the high value productivity of the timber industry unless full use is made of research knowledge. New methods or improved modifications of old methods, of cutting, handling, processing and utilization must be developed so that increased efficiency will result in the reduction of waste. This will involve the services of the engineer, the forester, and the economist, all working in close cooperation with others."

Dr. J. Risi, Professor of Wood Chemistry, Faculty of Forest Engineering, Laval University, Quebec City, Que., spoke on "Synthetic Ammonia and Ammonia Fertilizers from Wood Waste." In chemical literature, mention is made of a process recently developed in India, according to which synthetic ammonia is made from producer gas, using wood as a fuel, the ammonia being converted into ammonium sulphate, a valuable fertilizer, Dr. Risi pointed out, giving a short description of this process based upon the steam-iron method. He claimed that a variation of this process, using d e Lacotte generators, wood waste, oxygen-enriched air, and gypsum, could advantageously be introduced in Canada in those agricultural centers where wood waste in quantities of 70 tons per day or more is available at pulp and paper mills or large sawmills.

"The Production of Essential Oils from Coniferous Foiliage" was the subject discussed by A. C. Shaw, Ontario Research Foundation. "The production of essential oils is suggested as a possible means of utilizing waste coniferous foliage from logging operations.

"The yield of oil from foliage has been determined for several species of conifer and it is noted that in the case of black spruce, eastern white cedar, hemlock and Canada balsam, the yields are high enough to permit commercial production," he indicated.

W. J. LeClair, secretary-manager of the Canadian Lumbermen's Assn., Ottawa, spoke on "The Sawmill Industry."

Other technical papers delivered at the convention included: "Forest Products Industries of Canada" by Dr. John S. Bates, Price & Pierce, Ltd., Montreal, Que.; "Wood Preservation and Timber Economy," Dr. R. H. Colley, Timber Products Consultant, Bell Telephone Laboratories, Murray Hill, N. J.; "Glued Laminated Timber Construction," Carson F. Morrison, Associate Professor of Civil Engineering, University of Toronto; "Softwood Plywood," J. B. Armstrong, Plywood Manufacturers' Assn. of B. C., Vancouver, B. C.; "Wood Adhesives," H. F. Dixon, Monsanto (Canada) Ltd., Montreal, Que.; "Coal Briquettes from Wood Waste," G. W. Hossack, Canadian National Railways, Research Laboratory, Montreal, Que.; "The Furniture Industry of Canada," L. G. Daignault, Dufresne McLagan & Associates, Montreal, Que.; "Condensation Control in Frame Buildings," M. E. Dunlap, Forest Products Laboratory, United States Department of Agriculture, Madison, Wis.; "Lumber Seasoning in Eastern Canada," R. S. Millett and A. G. Glennie, Forest Products Laboratory, Ottawa, Ont.; "Fiberboards, their Manufacture and Uses," D. W. Eipper, general superintendent, International Fiberboard Ltd., Gatineau, Que.

J. W. B. Sisam, Dean of the Faculty of Forestry at the University of Toronto, has been elected president of the Forest Products Institute of Canada. The executives also include: first vice-president, T. A. McElhanney, formerly Chief of the Forest Products Laboratory, Ottawa; second vice-president, A. D. Macpherson, Canadian National Railways, Montreal, Que. The national secretary is W. Forbes LeClair, Timber of Canada, Ottawa.

NPTA NAME CHANGE

The name of The National Paper Trade Assn. of the United States, Inc., was officially changed to The National Paper Trade Assn., Inc., by an amendment to the association's Certification of Incorporation filed in Albany, N. Y., on November 1, 1950.

Simultaneously certain other changes were made in the Certificate of Incorporation to conform the purposes of the organization and time of the annual meeting to actual practice. These changes are necessitated by the amendments to the By-laws ratified by the membership at the recent semi-annual meeting in Chicago.

FORM PACKAGING ASSOCIATION

OTTAWA — Approximately 250 representatives of packaging companies in Canada have unanimously decided at a meeting in Toronto to organize the Packaging Assn. of Canada.

The following board of directors was elected with power to add to their numbers from prominent users of packaging products and officers will be elected at a later meeting: M. H. McArthur, Hinde & Dauch Paper Co., Toronto; C. W. Stephens, Dominion Paper Box Co., Toronto; C. C. Gallowhill, American Can Co., Hamilton; J. P. Gledhill, Dominion Foils (Canada) Ltd., Montreal; C. R. Cornell, Canadian Packaging Magazine, Toronto; K. W. Malcolmson, Canada Foils Co., Toronto; E. Williams, Delamere & Williams Co., Toronto; Gordon Rolph, Rolph, Clark, Stone Co., Toronto; F. C. Lennox, Somerville Ltd., London; and B. V. Schaub, National Adhesives (Canada), Toronto.

The managing director of the new body will be F. C. Hayes, of Container Statistics, Toronto.

Corrosion—VII of Series

The Use of Nickel Containing Alloys in the Pulp and Paper Industry

H. O. TEEPLE

(Continued from November 9, 1950, issue)

Acid Pulping

For many years sulfite pulping made use of a calcium base sulfite cooking liquor. However, within the last few years other base liquors have come into commercial prominence. Hence, in addition to the calcium bisulfite cooking liquors there are magnesium, ammonium, and sodium or neutral bisulfite cooking liquors. To facilitate discussion and because it is the most widely used, the calcium base process will be discussed first.

Calcium Base Liquors

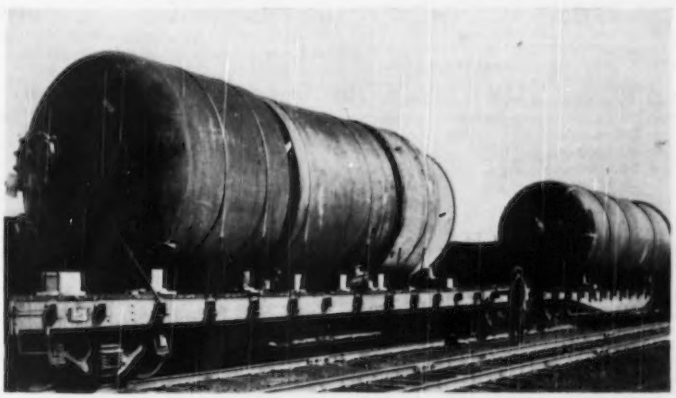
Corrosion problems as they occur in calcium base sulfite pulping were for many years difficult to solve primarily because of the lack of dependable alloys which were adequately resistant to attack by these acid liquors. The earliest materials used which offered any reasonable amount of corrosion resistance were acid proof brick, lead and acid resisting bronze. These materials were in the main fairly suitable but the advent of the austenitic stainless steels permitted substantial improvements both in handling of the cooking liquors as well as improvements in pulp quality.

Cox and LaQue (40) reported the results of an investigation of four failures of 18-8 chromium nickel castings which had been in sulfite servicee for varying periods of time, some up to two years. An additional sample happened to be a chromium-nickel-molybdenum alloy. In these early days (1933) while considerable information was available pertaining to the matter of intergranular corrosion of sensitized stainless steels, apparently the information was not too widespread in application. The examination of these stainless steel samples showed that failure was associated with gross chromium carbide precipitation with consequent severe intergranular corrosion. It is a known fact that in certain specific oxidizing media of which calcium bisulfite is a good example, the austenitic stainless steels are subject to intergranular attack if the steel is in a sensitized condition. These alloys were all high carbon content (0.18 to 0.54 percent) and apparently their initial heat treatment either was entirely absent or improperly done.

Following this illuminating study, LaQue (41) discussed the important characteristics of the austenitic stainless steels with respect to their applications in sulfite pulping and in comparison with materials formerly used. It was pointed out that the chromium-nickel alloys are notably less resistant to attack than are the chromium-molybdenum alloys if appreciable quantities of sulfuric acid are present in the hot cooking liquor. Further, if scale such as calcium sulfate tends to form, the 18-8 steels are more subject to localized attack than are the 18-8-3 alloys. These alloys are mentioned as being suitable for use in the acid plant, digester fittings such as covers, top sleeves, blow valves and thermometer wells. The austenitic stainless steels permitted the installation of so-called "Hot Acid Systems" with appreciable savings in steam and time. Other circulation systems developed benefited greatly through the use of these alloys. These steels found further use in blow pits as target plates and perforated blow pit bottoms. This paper further pointed out the use of a 20 percent chromium-10 percent nickel alloy for an experimental digester which at the time of writing (1936) had been in service for four years.

Scheil (42) summarized testing procedures used as a basis for selecting corrosion resisting alloys which will give reliable and successful service in the pulp and paper industry. As a result of specific testing programs, Scheil described the use of the austenitic stainless steels for horizontal tumbling digesters and for a hot acid storage tank both of which after reasonable periods of service were inspected and found to be performing satisfactorily. Schmitz (43 and 44) discussed known and possible applications of chromium-nickel alloys in the pulp and paper industry.

During the intervening years, the interest in the use of these austenitic alloys for digester service and in the early part of 1947 the first large alloy lined sulfite digester was placed in service (45). The digester was 15 ft. in diameter and 56 ft. high and field erected. To permit field erection without the danger of encountering intergranular corrosion in areas adjacent to field welds, a carbon content of 0.03 per cent maximum was specified for



It is impossible to get a complete shop fabricated digester into some existing pulp mills. For these cases A. O. Smith has developed a method of manufacturing and shipping them in easily assembled sections. The digester shown to the left is being shipped in three pieces: the top head and top shell, lined with Inconel, center shell and cone and bottom shell both lined with type 347. It is built for Kraft service with a diameter of 11'-0" and length 22' tangent to tangent. Weight is 62,300 lb. This is one of a complete mill installation of 7 SMITHway digesters replacing existing digesters. Program was begun 3 years ago.

the stainless and carefully followed. Inspection after about two years service indicated the vessel was performing satisfactorily. Since this installation, other alloy lined and alloy clad digesters have been installed and service life to date has apparently been satisfactory.

Whitney (*26*) in his review of corrosion problems, mentioned that Types 316 and 317 stainless had practically replaced all of the bronze fittings and lines previously used in handling gas and liquor at elevated temperatures and pressures. He further indicated many mills were replacing lead with these alloy. He reported considerable use of the 29 per cent chromium-9 per cent nickel alloy which LaQue (41) mentioned. Whitney also mentioned difficulties in the use of the austenitic alloys in handling sulfite liquors, particularly where crevices occur, such as at flange gaces in stainless lines and where appreciable concentrations of sulfur trioxide are present.

The sulfite cooking liquors are too corrosive for Monel, nickel or Inconel for these materials to show an economical service life and hence these materials are not suggested for service where the corrosive medium is the acid pulping liquor.

To illustrate the serviceability of these materials discussed, corrosion data are shown in *Table IV*.

TABLE IV

PLANT CORROSION TESTS IN CALCIUM BISULFITE COOKING LIQUORS

A. Specimens exposed for 28 days attached to digester cover. Cooking liquor consisted of 7.87% total SO_2, 6.82% free and 1.05% combined. Temperature ranged from 143° F. to 291° F.

B. Specimens exposed for 55 days in a pipe just below the upper cone of sulfite digester. Liquor consisted of 8.23% total SO_2, 7.02% free SO_2 and 1.21% combined. Temperature 131° C. (268° F.).

C. Specimens exposed for 51 days behind digester strainer. Liquor consisted of 7.5% total SO_2, 6.3% free SO_2 and 1.2% combined SO_2. Temperature 145° C. (293° F.).

	Indicated Corrosion Rate, ipy		
Material	A	B	C
Type 304 Stainless	0.0001	0.0001	0.0005(*h*)
Type 316 Stainless	0.8001	0.0001	0.0001
Type 317 Stainless	0.0001	0.0001	0.0001
Type 309 Stainless	.....	.....	0.0001
Type 310 Stainless	.....	.....	0.0001
Type 330 Stainless	.....	.....	0.026
Worthite	0.0001	0.0001	0.0001
Hastelloy C	0.0005	0.0002	0.0006
Mild Steel	11.0(*a*)	0.20(*f*)	.....(*f*)
Cast Iron	1.8(*b*)	0.54(*f*)	.....(*f*)
Monel	0.62(*c*)	0.10(*f*)	.....(*f*)
Nickel	0.79(*d*)	0.10(*f*)	.....(*f*)
Inconel	0.010(*e*)	0.006(*g*)	0.011 (*g*)

a. Specimens corroded away in one day—minimum rate shown.

b. Specimens corroded away in 18 days—minimum rate shown.

c. Specimens corroded away in 9 days—minimum rate shown.

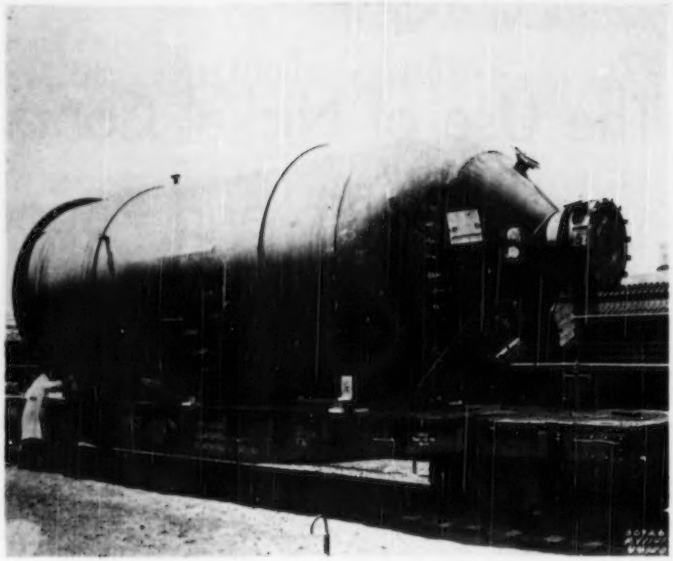
d Specimens corroded away in 7 days—minimum rate shown.

e. Specimens pitted to a depth of 0.009" during test period.

f. Specimens corroded away during test exposure period.

g. Specimens pitted to a depth of 0.012" during test period.

h. Specimens pitted to a depth of 0.005" during test period.



One of 4 A. O. Smith digester designed for modified Kraft Cooking leaving for the south. All are lined with type 316 extra low carbon. The size is: diameter 11'-6", length 24'-9" tangent to tangent, weight 63,200 lb.

It is to be observed from these data that the chromium-nickel-molybdenum alloys are probably the most suitable for use in handling sulfite cooking liquors. While the 18-8 steels show a low corrosion rate based upon weight loss measurements, experience has indicated they are not sufficiently resistant to localized attack to warrant the use of these alloys. As was mentioned above, this is particularly true if appreciable quantities of sulfuric acid are present or if sulfate scaling is a factor.

These data will bear out the suggestion that Monel, nickel and Inconel should not be used for acid pulping applications.

These data will also lend support to the points made by Hoar (46) in discussing modern sulfite acid practice. He mentioned the use of the new alloys and equipment permit the use of a closed cycle acid operation. A contributing factor is the use of "bottle-tight" storage vessels. Schmitz and Scheil (47) reported the fact that an acid storage tank lined with Type 347 stainless steel showed no corrosion either in the liquid or vapor zones after ten years operation. Further, since the installation of this tank six more tanks, operating at 45 psi, lined with Type 316 low carbon stainless steel have been installed. Hicks (34) mentioned the use of Hastelloy Alloy C for rotometers controlling calcium bisulfite cooking liquors.

Magnesium Base and Ammonium Base Liquors

As was mentioned earlier, cooking liquors utilizing other bases than calcium have been of considerable commercial interest in late years. Such cooking liquors are of the soluble base type as ammonium bisulfite and magnesium bisulfite. In order for these newer liquors to be economically justifiable, the recovery of the unused chemical values in the liquors is of extreme importance. These spent cooking liquors can be concentrated and burned much like the soda and sulfate liquors and the chemicals recovered by appropriate means. These soluble base sulfite cooking liquors have been used in those instances where contamination of natural bodies of water have been a problem with respect to calcium base liquors. The chemical recovery features of these cooking liquors have provided a solution to the stream pollution problem.

Tomlinson and Wilcoxson (48) discussed the economic disposal of waste sulfite liquor and mentioned the fact that the calcium bisulfite waste liquors could be concentrated and burned. However, the calcium sulfate scaling problem attending this operation seriously impairs this method of disposal of the calcium base liquor from an economic viewpoint. Hence, other pulping liquors were investigated and these authors present a detailed discussion of the magnesia base process. Hatch (49) also discussed the magnesium bisulfite method of pulping and described progress made to date.

An Article (50) described the starting up of a magnesium bisulfite mill on the West Coast and Zaker and Wilcoxson (51) presented a progress report on this mill. They mentioned the use of stainless steel for the spent liquor multiple effect recovery evaporators.

As far as ammonia base pulping is concerned, one mill on the West Coast has been using this process for about five years and a few other mills have gone over to the use of this pulping liquor. Markham and McCarthy (52) mentioned the use of a 50 liter stainless steel digester during an investigation of changes in composition of ammonium sulfite waste liquors in certain recovery operations.

Since both these soluble base pulping liquors are relatively new, not much corrosion data are generally available which will serve as guides for the selection of suitable materials of construction. It is known, however, that serious problems do exist and it would appear that some could be solved by the use of certain of the austenitic stainless steels. In one case, a magnesium bisulfite mill reported repeated failures of Type 316 stainless steel vapor lines from the digesters and from the diffusers. Rapid attack occurred in areas adjacent to welds and severe pitting was observed. The mill reported that 16 gauge Type 316 stainless lasts from 6 weeks to 6 months in this service. A sample showing this severe attack was provided for examination. Plant tests were made by the exposure of two separate specimens holders and these results are shown in *Table V*.

TABLE V

PLANT CORROSION TEST IN VAPORS FROM MAGNESIA BASE PULPING

Specimens exposed for 17 days in vent line from blow tank. Temperature 180° F.

Material	Indicated Corrosion Rate, ipy Spool 1	Spool 2
Type 316 Stainless	0.008, 0.001(*a*)	0.0002(*b*)
Type 317 Stainless..	0.0001	0.0001
Hastelloy C	0.0008	0.0008
Chemical Lead	0.006	0.008
Monel	0.12	0.12
Carbon Steel	0.54	0.42
Inconel	Corroded Away	0.26

a. Results of the duplicate spec. Local etching and incipient pitting.

b. Evidence of pitting and localized attack.

The corroded sample provided for laboratory examination consisted of two pieces of sheet stainless welded together. One of the two pieces showed severe overall attack while the other piece was in fairly good condition except for evidence of attack adjacent to the weld. Laboratory examination found that the corroded portion was Type 304 stainless while the other was Type 316. Microscopic examination of the corroded area of the Type 316 portion adjacent to the weld showed some intergranular attack due to precipitated carbides.

On the basis of this investigation the following conclusions can be drawn:

1. Although the duration of the plant tests was only 17 days, serious pitting was noted on the Type 316 stainless steel specimens which substantiate plant experience.
2. The discrepancy in weight loss corrosion rates of the Type 316 specimens indicates the service conditions are borderline in nature for Type 316 stainless.
3. The service performance of the stainless which turned out to be Type 304 appears to be ample proof that this alloy is not suitable for this service.
4. The fact that the laboratory found intergranular attack in the heat affected zone of the welded Type 316 stainless steel confirms plant experience in that failures have occurred in these areas.
5. The higher alloy content of Type 317 stainless appears to provide adequate resistance to attack. On this basis and considering (4) above, it appears that Type 317 with 0.03 per cent carbon maximum would have considerable merit for these service conditions.
6. The test data indicate that Monel, Inconel and mild steel are not suitable for use under the described conditions.
7. The test data indicate that Lead could be used in some instances and further that Hastelloy C is quite resistant to corrosion by the media involved.

Sodium Base Liquors (Neutral Sulfite Semi Chemical)

Although the neutral sulfite semichemical puilping process has been known for some time, it is only within the last few years the process has assumed commercial importance.

The NSSC pulping process is particularly suitable for hardwoods and therein lies its current interest. Since there now is a permanent shortage of soft woods and further the hardwoods are encroaching more and more on mixed stands, it has been expedient to cut much of the hardwoods for neutral sulfite pulping and thus effect to some extent a re-balancing of the ratio of hardwoods to softwoods in the forests. A staff report (53) presented the result of a conference on neutral sulfite pulping and the process was discussed from several aspects.

Aries (54) discussed in detail the pulping of Southern New England hardwoods and Krancher (55) described the pulping of straw, both using the NSSC process. Perry (56) described the neutral sulfite process and Chidester (57) gave a rather detailed account of the effect of neutral sulfite pulping on the various constituents of woods. Murfeldt (58) described the production of high grade book paper using the neutral sulfite pulping process.

The corrosion problems that exist in the neutral sulfite process are probably real ones in many cases. However, not much has come to light as far as statements of the problems are concerned. It is believed that the austenitic stainless steels, particularly Type 316, will provide solutions to the problems of liquor making and handling. Since pH of the sodium bisulfite is adjusted with soda ash to a value above 7 it is possible that carbon steel may suffice for some installations. However, indications are that most of the NSSC pulp is bleached, the use of iron or steel may be curtailed due to the added load on the bleach plant. It is known that a popular continuous digester for NSSC pulp is made of stainless clad steel which should give a reasonably long life as well as produce a pulp low in undesirable metallic contamination.

The results of a recent plant test, shown in *Table VI*, made in an SO_2 absorber for the production of sodium bisulfite indicate that the austenitic stainless steels have considerable merit for this service.

TABLE VI

PLANT CORROSION TEST MADE IN SULFUR DIOXIDE ABSORBER

Specimens exposed for 45 days at fan inlet of absorber tower in the absorption of sulfur dioxide in sodium carbonate solution. Temperature 160° F.

Material	Indicated Corrosion Rate, ipy
Type 316 Stainless Steel...	0.0010
Type 317 Stainless Steel...	0.0007
Type 310 Stainless Steel ..	0.0001
Pioneer Metal	0.0072
Hastelloy B	0.015
Carpenter 20	0.0007
Illium	0.0026
Chemical Lead	0.003
Monel	0.016

These results also indicate that Monel and Hastelloy Alloy B are not suitable for service under these conditions.

While it is believed the austenitic stainless steels as a class will provide answers to many of the corrosion problems arising through the use of calcium, magnesium, ammonium or sodium base sulfite liquors for wood pulping, it would appear reasonable to suggest that careful analyses of the problems be made. Once this has been done, useful information will be available upon which cooperative plant corrosion tests can be based. The information will also be in a presentable form for consideration by engineers accustomed to working with corrosion problems. In this fashion the problems probably can be solved with a minimum expenditure of time and money.

Groundwood Pulping

In groundwood pulping, the use of corrosion resisting alloys is associated to a large extent with the handling of the freshly ground wood. After the stock passes this point in the flow sheet, attendant corrosion problems can be treated more adequately under paper making.

In the groundwood pulping operation, some woods are more corrosive

than others, due to varying amounts of organic acids liberated during the grinding operation. Hence, the use of corrosion resisting alloys not only would result in better service life of these components but also would result in a product of lower iron contamination. This latter fact would obviously be a considerable advantage where groundwood bleaching is done. Frequently, stainless castings are used for pulp stone flanges and grinder pockets.

To illustrate the usefulness of nickel containing alloys in groundwood pulping, some corrosion data are shown in *Table VII*. These data were developed by Andrews (59) during a study of corrosion in groundwood mills.

TABLE VII

PLANT CORROSION TEST IN GROUNDWOOD PULPING OF SPRUCE

Specimens exposed in the grinder pit and subjected to splashing of spruce pulp at the grinder. Temperature was not given but the pulp was described as hot. The duration of tests are indicated.

Material	Indicated Corrosion Rate, ipy	Days
Monel	0.0018	56
Copper	0.011	56
18-8 S. S.	0.0001	24
Aluminum	0.013	125
Cast Iron	0.051	20
Ni-Resist	0.0073	100

By-Product Recovery

During recent years, the chemistry of the paper industry has been studied both extensively and intensively and one of the interesting phases of these studies is the fact that waste pulping liquors are quite valuable for their respective organic chemical values.

TABLE VIII

PLANT CORROSION TESTS IN VAPORS ABOVE CRUDE SULFATE TURPENTINE IN STORAGE

Specimens exposed for one month at atmospheric temperature.

Material	Indicated Corrosion Rate, ipy	Remarks
Type 304 Stainless Steel	0	
Aluminum	0	
Copper	Slight Gain	Coated with copper sulfide
Everdur 1010	0.00017	
Nickel	0.00004	
Galvanized Iron	0.00015	Corrosion on the unprotected edges
Steel—Tygon Coated	0.0037*	Paint mostly gone, steel badly corroded
Mild Steel	0.0056	Badly corroded

* The solvent action of the turpentine vapors destroyed most of the paint film. The slight gain in weight of the copper specimen undoubtedly was due to incomplete removal of the corrosion product.

In sulfate pulping, the by-products currently recovered are turpentine and tall oil soap. Turpentine or sulfate tourpentine, as it is frequently called, is recovered from relief gases from the digesters during the cook and during the gas-off just prior to the blow. The recovery is quite simple since the vapors are passed through a cyclone separator and thence to a condenser. A description (60) of turpentine recovery is given including a flow sheet of the kraft process showing the point of turpentine recovery. A study was made by Norton et al (61) of the corrosion of storage tanks for crude sulfate turpentine. They found the corrosion of the steel tanks occurred primarily in the vapor zone and was attributed to the presence of hydrogen sulfide which apparently is formed through the decomposition of certain organic sulfides present in the crude turpentine. The results of corrosion tests made by the authors are shown in *Table VIII*.

The authors concluded that:

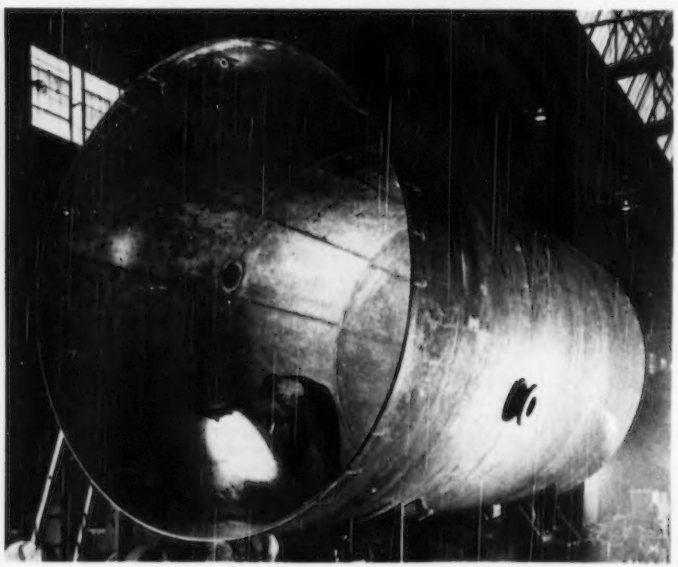
1. Tanks made of nickel, stainless or Everdur should be satisfactory. Alloy clad steels would probably suffice and be somewhat less expensive.
2. Aluminum or galvanized tanks probably would be acceptable but tests should be made under operating conditions.
3. Copper would doubtless be satisfactory.
4. A steel tank insulated against temperature variations would be an improvement over present conditions.
5. A steel tank kept full should suffer little corrosion.

As far as corrosion of equipment used to recover turpentine is concerned, probably carbon steel will suffice for most of the equipment. If, however, salt water is used in the condensers, while Monel tubes would be satisfactory, the use of cupro-nickel tubes probably would represent a reasonable economical compromise.

In passing it is notable that Powers (62) described many chemical uses of sulfate turpentine. Hasselstrom (63) described some fundamental research on sulfate turpentine and tall oil.

Spent sulfate pulping liquor is the source of tall oil soap which is usually obtained as a skimming from an intermediate storage tank in the black liquor recovery system. This soap can be split with sulfuric acid producing crude tall oil, a source of several commercially important high molecular weight organic acids such as oleic, linoleic, linolenic and abietic. While actual data on tall oil soap splitting using sulfuric acid are not available, it is believed Monel would be quite serviceable. This is based upon the extensive use of Monel for sulfuric acid fat splitting in the soap industry. In such instances corrosion rates of the order of 0.001 ipy have been observed.

Tall oil purification can be achieved either by fractional distillation or by selective solvent extraction and both methods are currently being used. Vilbrandt and Ward (64) studied the corrosion of metals and alloys in the vacuum distillation of crude fatty acids recovered from kraft pulps. They found the austenitic stainless steels, nickel and high nickel alloys were quite resistant. Experience accumu-



Inspecting the welds of a center section of an A. O. Smith digester lined with extra low carbon Type 316.

lated to date indicate that type 316 stainless is apparently quite serviceable up to about 575°F. but above that temperature the rate of corrosion increases appreciably. Inconel is the preferred alloy for the high temperatures and these points are illustrated by the data appearing in *Table IX*.

It is to be noted in passing that although some of these data purport to show the effects of molybdenum content in the austenitic stainless steels, it is entirely possible the much lower rate shown for Type 317 may be due primarily to the higher chromium content and not to the higher molybdenum content alone.

Reference should also be made to TAPPI Scpecial Report No. 354 which discussed materials of construction for tall oil plants. Among the alloys mentioned were the austenitic stainless steels, Monel, Worthite and nickel. While much of the information is undoubtedly representative of the performance of the various materials, other general experience with some of the metals and alloys does not correspond too well with some of the results reported.

TABLE IX

LABORATORY CORROSION TESTS IN REFINED TALL OIL AT VARIOUS TEMPERATURES

Material	Indicated Corrosion Rates, ipy			
	at 545° F.	at 572° F.	at 600° F.	at 625° F.
Type 302 Stainless Steel	0.18	0.50	0.80	....
Type 316 S. S. (2.20% Mo)	0.004	0.004	0.072	....
Type 316 S. S. (2.33% Mo)	0.001	0.003	0.027	0.50
Type 316 S. S. (2.55% Mo)	0.002	0.002	0.059	....
Type 317 S. S. (3.25% Mo)	0.0005	0.0008	0.021	....
Inconel	0.010	0.010	0.013	0.011
Hastelloy C	0.004	0.005	0.004	....

Sulfite waste liquors appear to be an excellent source of many useful organic compounds. Lewis (66) gave a review of by-products of sulfite pulping and listed many current and potential uses of the liquor itself as well as some of the chemical components. Pearl (67) discussed the utilization of waste sulfite liquors and also listed many of the uses of the chemicals derived from spent sulfite liquor. In passing, it is worth noting one of the most potentially useful materials recoverable from waste pulping liquors is lignin.

Some corrosion problems undoubtedly exist in the recovery of certain of the components of the waste liquor. It is, however, difficult to indicate suitable materials because recovery method used will govern the conditions involved. No doubt the use of nickel containing alloys will prove quite useful. In many cases, corrosion tests, corrosion tests made under specific conditions will be desirable, if not mandatory.

(To be concluded November 23)

Partial Acidification of Unbleached Kraft Pulp*

Jesse C. Bradbury[1]

Dating back to the beginning of kraft pulp mill operations in 1944, Southland Paper Mills, Inc., Lufkin, Texas, was faced with an operational problem concerning the high pH values of the washed and screened brown slush pulp. These pH values were not necessarily indicative of inefficient spent liquor removal from the pulp, but rather the result of the addition of mill supply water possessing unusually high pH and alkalinity values.

With fresh water having an initial pH of 8.4 it was not possible to wash, knot, screen and dilute the pulp and attain a pH level that would, in most mills, indicate efficient washing. Thus a permissible amount of spent liquor in the screened pulp was sufficient to raise the pH of 10.0. However, a sudden rate increase on the washers that resulted in pulp containing more than the normal amount of spent liquor did not raise the pH proportionately since the pH curve tends to level off at higher alkaline concentrations. This pulp, when transferred to the cylinder machine chest, caused the pH to rise at that point, whereupon the automatic control equipment supplied more alum to the pulp which, in turn, caused change in the drainage rate on the cylinder moulds. The operator then reset the Jordans to compensate for the change of level in the cylinder vats. Formation of the sheet changed, basis weight and moisture content varied. Thus began the vicious cycle of attempting to cope with a variable that was difficult to measure.

The cylinder machine operators were not the only ones concerned with that problem. In the bleach plant, the chlorine demand in the chlorination stage rose and fell with the alkalinity of the pulp, causing operating difficulty and variations in brightness of the bleached pulp.

As the requirements of alum and chlorine could not be foreseen at the ordinary 9.5 to 10.5 pH of the screened stock, it was desirable to lower the pH to the range of 6.0 to 7.0, in which range slight variations would be of less consequence, and at the same time, great quantities of alum for papermaking and chlorine for bleaching would not be expended in the neutralization of alkali remaining in the pulp.

It was to cope with this problem that in 1948 a program was initiated to study the effect of sulphuric acid when used to control the pH of slush pulp in the screened stock chest.

The use of sulphuric acid to neutralize entrained spent cooking liquor and the alkalinity of the water present in washed and screened pulp in the kraft process has been explored on both laboratory and mill scales with favorable results, both cost wise and as an aid to more efficient and stable operation.

Laboratory results indicated that when the pH of the slush pulp was reduced from approximately 9.7 to 6.0 by the addition of sulphuric acid, the saving, in alum used to precipitate the rosin size in board products, and the chlorine used in the chlorination stage at the bleach plant, was sufficient to warrant further investigation. The laboratory work consisted of obtaining samples of pulp from the screened stock chest, treating the filtrate with sulphuric acid to a pH of 6.0, then adding alum until a pH of 4.5 was obtained. To a second portion of the filtrate, alum alone was added until the pH was 4.5. The cost of treating with sulphuric acid and alum was compared to the cost of treating with alum alone. Results of five tests indicated that the saving effected by the use of sulphuric acid and alum instead of alum alone amounted to 43 per cent.

Due to fluctuations in operating con-

[1] Southland Paper Mills, Inc., Lufkin, Texas.

* Presented at the 1950 fall joint meeting of the Southeastern and Southern Divisions of the American Pulp & Paper Mill Superintendents Assn., on October 12-14 at the George Vanderbilt Hotel, Asheville, N. C.

ditions of the washers, there was some variation in the original pH of the samples used for testing. It was noted that the percentage saving in alum increased as the efficiency of the washing system decreased. Therefore, higher production rates meant added savings.

Samples from the same source were used to determine chlorine consumption demand in the chlorination stage of the bleach plant. In these tests, the filtrate from the screened stock was treated with sulphuric acid until a pH of 6.0 was reached. Chlorine water was added to a second portion of the filtrate and the pH reduced to 6.0. The saving in reducing the filtrate from 9.7 to 6.0 by the addition of sulphuric acid, rather than chlorine, amounted to 54 per cent. Again, the percentage saving increased as the efficiency of the washing system decreased.

Stock samples treated with alum alone, and identical samples treated with sulphuric acid and then alum were crosse checked for freeness using a Schopper-Riegler freeness tested. Little variation in freeness was observed.

The favorable results of laboratory investigations prompted a 24-hour mill scale run with the addition of dilute sulphuric acid to the screened stock chest. Accurate production and cost records for both bleached pulp and cylinder machine board, were kept and used as a basis for comparison of cost with non-acidified pulp. Results of the 24-hour mill scale run were better than anticipated from the laboratory data.

As examples: the average cost of alum to the cylinder machine for the two months period immediately preceding the test run amounted to $1.67 per ton of board products; while, in contrast, the cost of alum and acid during the trial run amounted to $0.77 per ton—saving of $0.90 per ton.

Added to that figure was the saving effected by the use of the sulphuric acid treated brown slush transferred to the bleach plant. Records of the same two months period showed the cost of chlorine used for bleaching, to be $5.31 per ton of bleached pulp; the cost when using acid treated brown slush to be $4.84 per ton—saving of $0.47 per ton.

A substantial saving could be realized, along with the added advantage of having the stock delivered to both the paper machine and bleach plant at a uniform pH value, thereby eliminating fluctuations that tend to vary not only the chemical consumption of the pulp in process, but the uniform quality of the end product.

Verification of the laboratory work during the mill scale run prompted the installation of permanent equipment for the purpose of adding dilute sulphuric acid to the kraft mill screened stock chest. Existing equipment was utilized wherever possible, and new installations made where necessary.

A steel storage tank capable of containing one and one-half tank cars of concentrated sulphuric acid was found to be suitable and of sufficient capacity. A steel measuring tank complete with supply pump and overflow to storage tank serverd to measure the quantity of concentrated acid necessary for each batch of dilute acid. The 4,000 gallon steel tank used for storing the dilute acid was lead-lined to prevent corrosion. One inch I.D. pipe, all flanges, valves, pumps, etc., used to convey the dilute acid to the screened stock chest, were of lead, stainless steel, rubber or other material resistant to the highly corrosive action of the acid. There has been no evidence of corrosion due to the use of sulphuric acid treated pulp in the mild steel piping of the pulp mill.

A Beckman pH indicator, with a scale calibrated 3 to 10 pH, having electrodes immersed in the brown slush pulp at the overflow of the screened stock consistency regulator, continuously indicated the pH of the pulp in the chest.

The screen room operator was given the responsibility of regulating the pH of the brown slush. For this purpose a Fischer and Porter Flowrator, calibrated 0 to 11 gallons per minute, was connected in the acid line between the pump and the screened stock chest and equipped with a rising stem Alloyco valve for manual operation. Flowrator and pH indicator were mounted side by side for convenience of operation. Automatic control equipment could not be used because two chests with an equalizing line are used as screened stock storage. All acid, screened stock and stock return enter the same chest from which the supply pumps operate. The stock volume in the two chests is so great that the rate of pH change and automatic compensation would be too slow for efficient operation.

A Bristol pH recorder, operating in conjunction with the Beckman pH indicator, was installed in the office of the pulp mill superintendent and accessible to the pulp mill tour foremen. The operators knowledge that this recorder was making a permanent record was sufficient to keep the pH of the screened stock within very close range. It might be noted that very little adjustment is necessary during periods when the production rate remains fairly constant.

The partial acidification of unbleached kraft pulp has been applied to mill operation for a period of over two years. During this time the chemical cost has been decreased, and the burden of chemical storage and handling has been lightened. The operators have been able to depend upon the pH uniformity of the pulp when received at the bleach plant or stock preparation. The behavior of the treated stock has minimized the number of operating variables concerned with the wet end operation of the machine without impairing the strength of the finished product.

The Curlator as a Pulp Refiner*

Harold A. Skinner[1]

Our interest in the Curlator or some similar machine began right after World War II. It was prompted by our knowledge that the No. 2 grade of sulphite which we made during the war and forced upon the pulp hungry papermakers, was losing its popularity. Naturally, the termination of the war and the availability of increased pulp tonnage made our war baby a sure orphan. Who wanted shivy, dirty pulp when quality grades were available again?

Our No. 2 sulphite was a grade which might better be called glorified screenings. However, if we called the stuff screenings no self-respecting papermaker would use it.

What we did was to take the knots and larger sized uncooked chips out of our pulp in two separate knotting operations, and after refining, called them screenings. All the rejects from our secondary screening operation were called No. 2 sulphite. We could make this pulp look good or bad, depending on how much of it we ran over our screens and how much of it the papermakers could use.

Naturally, this practice made a very good screening operation for us. We could over-run our primary screens. We could screen more pulp. Also, we could make cleaner pulp and still find end use for our various grades; and,

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* Presented at the 1950 fall meeting of the Northwestern Division of the American Pulp & Paper Mill Superintendents Assn. held on September 15-16 at the Hotel Schroeder, Milwaukee, Wis.

of course, make the lowest possible grade of actual screenings.

About a year ago, the Curlator came to our attention as a "natural" for deshiving No. 2 sulphite. After laboratory trials on our product and personal observation of the process in actual operation, our management brought and installed the first Curlator in this part of the country. This installation was placed in operation in March of this year. We are again in big scale No. 2 sulphite production, only now it is known as No. 1 sulphite and upgraded considerably in price.

Curlation is a new mechanical process by which pulp is first dewatered to consistencies of approximately 20 per cent O. D. under conditions which promote formation of tiny balls of fibers. These tiny balls then are rolled in different circular directions between fairly sharp surfaces that compress them as they roll.

The Curlator, which is the machine used for doing this work, was developed a few years ago by papermakers and precision machine engineers in a cooperative effort. Precision built and resembling a machine tool that you might find in a machine shop, it weighs about 20 tons.

Five motors are required to operate it and a stock pump is required to furnish it.

The simplicity with which it operates and the results of the operation really are a revelation to everyone who has come in contact with it.

The Curlator works in this manner: the pulp to be treated is supplied from a head box to the machine at constant pressure. It enters at the center and progresses radially outward where it is dewatered to approximately 20 per cent B. D. consistency. This thickening action is accomplished by a rotating sweep which moves the stock outward and upward over a perforated plate.

The advancing stock then comes in contact with a gyrating upper plate and a stationary lower plate whereby it is rolled into tiny balls or nodules. This action continues until the stock is rolled in many different circular directions with gradual progression towards the periphery of the plates. There it is discharged upon a turntable to a mixing box, rejoining the water removed in thickening.

The upper plate is free to float vertically. The degree of compression applied to the rolling nodules is controlled by oil hydraulic pressure (loading pressure.)

The Curlator also is provided with a manifold for the injection of steam into the nodulated pulp after thickening. By this means, the treatment may be carried out at high temperatures with relative economy.

The through-put of the Curlator is regulated by the pressure head of the stock supply and the speed of dewatering the stock before treatment. Its present maximum capacity is 45 tons per day. Since our machine is being used as a straight refiner, it was designed for lower tonnage.

Curlation bends, twists and wrinkles the individual fibers. In terms of deshiving, it unravels and dissipates fiber bundles from incompletely cooked wood. It increases tearing strength materially without loss in Mullen. Increased softness also is always in evidence.

The action of the Curlator on pulp is decidedly rubbing and brushing. For this reason there is no degrading of product due to cutting or breaking of fibers. The shives and dirt particles are reduced so finely that most of them are not visible to the human eye.

In our case, based on the small amount of information at hand, we actually transform glorified sulphite screenings into quality pulp. This pulp may be used in our bleaching and papermaking operation to produce almost any end product desired.

Curlation is very simple, because the machine does practically everything. Although we are only using the machine as a pulp refiner, we know of many other uses for it. Some of these uses may enter into our picture in the near future.

Burning of Calcium Base Sulfite Liquor without Auxiliary Fuel

C. E. Rogers[1] and R. S. Jolley[2]

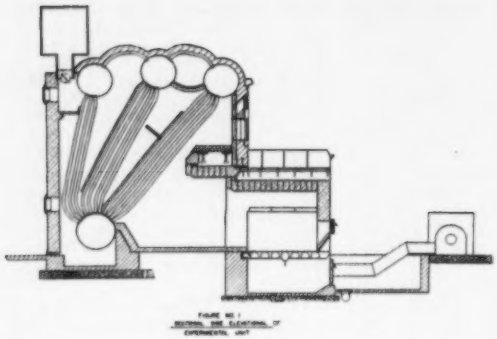
Introduction

The Sulphite Pulp Manufacturers League of the Wisconsin area have been conducting research to determine an economical method for disposing of the effluent liquor from the digesters of a calcium sulfite mill to eliminate stream pollution. One approach to the problem has been to study the economic possibilities of concentrating the spent calcium sulfite liquor, thereby, reducing the quantity of liquor to be processed for subsequent preparation of road binder, vanillin, yeast and alcohol.

As the preliminary step in this investigation, they installed a small single effect Rosenblad evaporator at the Interlake Division of Consolidated Water Power and Paper Company, Appleton, Wisconsin, with which they demonstrated the feasibility of evaporating calcium base sulfite liquor by the Rosenblad process. This process consists, in part, of using an evaporator having a plate type heat exchanger with duplicate passages for steam and liquor. The principle of operation consists of interchanging, periodically, the flow of liquor and steam in the two channels, or groups of channels, of the heat exchanger. Thus the scale formed in the channel enclosing the liquor flow during one period is dissolved by the acid condensate passing through the same channel during the subsequent period.

However, proving the feasibility of concentrating calcium base sulfite liquor for further processing as yeast, vanillin, etc., does not completely solve the problems of waste disposal because the market for these derivatives is limited. Therefore, the next logical step was to investigate the problems of burning the excess liquor and using the heat of combustion for the generation of steam. This steam to be used in concentrating the liquor and for other mill requirements. As a result, the Sulphite Pulp Manufacturers League selected a committee of three to visit the Scandinavian sulfite pulp mills and investigate the experiences with the evaporation and burning of calcium sulfite liquor in those countries. The Investigating Committee in their report (*Paper Trade Journal*, January 5, 1950) indicated that they had been advised by the people in Scandinavia that attempts to burn calcium base sulfite liquor alone had been unsuccessful and that the most favorable way to burn this liquor was by firing it in conjunction with other fuels. However, the people at Consolidated Water Power and Paper Company were not satisfied that this method was necessarily the only or even the best method

[1] Research & Development Dept., The Babcock & Wilcox Co., Alliance, Ohio.
[2] Engineering Dept., Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.



for firing calcium sulfite liquor and so they consulted The Babcock & Wilcox Company for their opinions on this subject.

B&W having had considerable experience burning various effluents from pulp mills were of the opinion that calcium base sulfite liquor could be burned independently of other fuels; this opinion being substantiated by 1) the previous experience of successfully burning calcium base sulfite liquor during similar experimental work at Canada Paper Company, Windsor Mills; 2) the experience in burning ammonia base sulfite liquor in cooperation with Rayonier, Inc., at the plant at Shelton, Washington; and 3) the experience of burning the liquor from commercial operation of the magnesium base sulfite mill at Longview, Washington, and recovering the heat and chemicals for re-use in this cyclic process.

Description of Experimental Unit

As the result, it was agreed to conduct experiments at Appleton, using an existing Stirling boiler in the power plant for a demonstration to reaffirm that calcium sulfite liquor could be burned independently of other fuels. This boiler unit, illustrated in *Figure 1*, has 2900 square feet of available heating surface without superheater, economizer, air heater or other heat traps and equipped with a refractory Dutch oven furnace over a Detroit "V" type stoker is capable of developing 290 boiler horsepower at 100 percent rating with steam at 125 pounds per square inch saturated. In preparation for liquor firing, a layer of brick protection was placed over the stoker grates with openings left in the refractory for air admission and a forced draft fan was installed to provide turbulent air for combustion as illustrated in *Figure 2*. Openings were cut in the side walls of the furnace for inserting portable liquor and oil burners as illustrated by *Figure 3* and a liquor storage tank, with steam coil liquor heater, liquor feed pump and piping where installed connecting the liquor supply from the evaporators to the burners as shown in *Figure 4*.

Experimental Procedure

After a week completing and testing the piping for liquor, steam, oil and air and checking the forced draft air distribution in the furnace, the test unit was ready for operation. The furnace and boiler were preheated by oil firing to 100 percent of rating using two oil burners, one located at the front of the left side wall and the other located at the door in the front wall of the furnace. Liquor of 62.7 percent solids, heated to a temperature of 158 degrees F. was then fired at 85 pounds pressure with one 5/32 in. "Spraying Systems, Inc." square jet nozzle inserted through the left side wall firing port and directed towards the front of the furnace (see *Figure 5*) so that the burning liquor particles would reverse in their flow to the boiler and pass by the incoming spray, thereby aiding in drying the liquor. Immediately, upon starting to fire liquor, the steam flow increased indicating the release of additional heat from this fuel. The oil burner in the front wall was gradually cut back and finally taken out of service. It was observed that only part of the liquor was burning in suspension. The balance was depositing on the arch and sides of the furnace and forming char which fell to the floor and burned to a fluffy white ash. This char, however, started to build up in the middle of the furnace floor and finally became high enough to block the liquor spray. The burner was then taken out of service to permit disposing of this accumulation of char which broke into flame and burned actively when disturbed with an air lance.

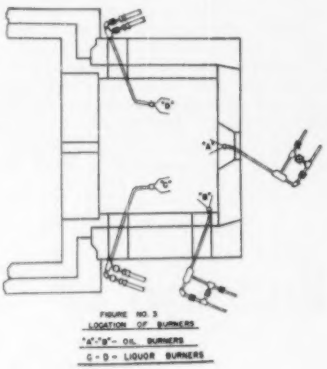
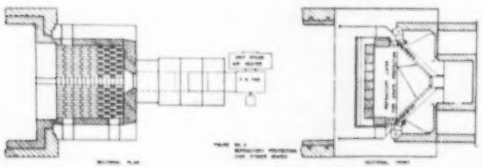


FIGURE NO. 3
LOCATION OF BURNERS
"A"-"B"- OIL BURNERS
C - D - LIQUOR BURNERS

During the balance of this period, further attempts were made to burn the liquor with the simple hydraulic type of spray, meanwhile, improving the system by insulating the liquor storage tank and liquor lines and installing an agitator in the storage tank to obtain higher liquor temperatures by increasing the circulation around the heating coil. Finally, after reheating the furnace with oil, two liquor burners were inserted into the furnace through the rear side doors, one on each side and liquor of 62.7 per cent solids was fired at temperatures of 176° F. Steam flow increased immediately, the oil burners were removed and the liquor continued to burn in suspension without auxiliary fuel and without ash accumulating on the furnace floor. This operation continued until the liquor pump motor tripped out, shutting the unit down.

Several conclusions were reached from this run which should improve the operation of the unit.

1. A different style nozzle which would better atomize the liquor within a narrower spray angle should im-



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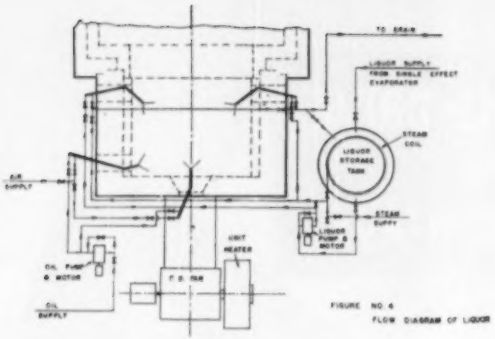


FIGURE NO. 4
FLOW DIAGRAM OF LIQUOR

prove suspension burning by increasing the drying rate of the liquor particle without impingement on the furnace walls.

2. Preheated combustion air should improve the drying and burning of the liquor in flight by increasing the furnace temperatures.

3. Increasing the liquor temperatures should improve atomization and accelerate liquor drying by moisture flashing to steam in the furnace.

During the next run, B&W Y-jet steam atomizing nozzles similar to those used for conventional oil firing were assembled on the extended burner pipes (see *Figure 6*). The sprayer plates of these nozzles had five outlet ports which distribute the liquor equally about the center line of the plate within a 70 degree spray angle. A high degree of atomization was produced by the action of steam jets communicating with each liquor discharge port.

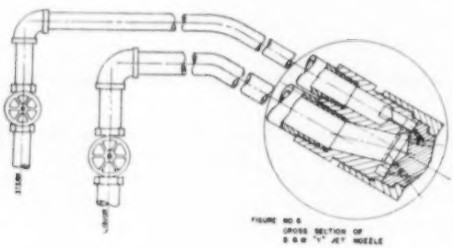


FIGURE NO. 6
CROSS SECTION OF B & W "Y" JET NOZZLE

The unit was again preheated, by firing oil, to 100 per cent of rating and then switched to liquor firing using one of the new type atomizers. Firing with liquor alone was found to be steady and a steam flow of 60 to 70 per cent of boiler rating was maintained until the liquor supply was exhausted. During this run, liquor of 62.7 per cent solids was fired at a temperature of 186° F and it was noted that liquor particles were smaller in size when atomized with the new sprayer plate and the color in the furnace was a bright orange as compared to the dull orange when using the original type of sprayer plate. There was no serious collection of ash on the furnace floor indicating that the majority of the liquor was burned in suspension.

During the next run, the unit was again preheated with oil and then fired with liquor of 62.7 percent solids heated to 182° F using two opposed Y-jet burners located in opposite side walls at the rear of the furnace. Ignition was steady and a boiler rating of 75 percent was maintained with liquor alone fired at a rate of 4.5 gpm until nozzle pluggage forced a shut down. Subsequent examination showed that the sprayer plates had plugged with wood chips and particles of coal which had apparently sifted into the storage tank.

A strainer was installed in the liquor line and the unit was again preheated

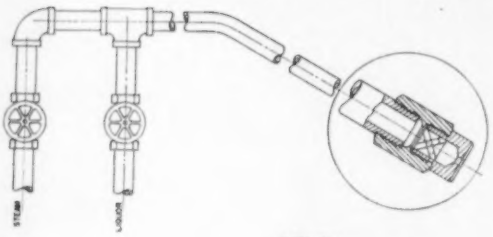
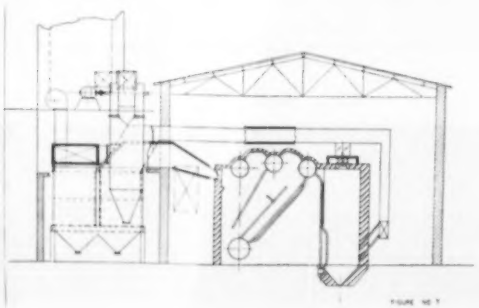


FIGURE NO. 5
CROSS SECTION OF SQUARE JET NOZZLE

with oil as the prelude to firing liquor. Two Y-jet liquor burners located in opposite sidewalls at the rear of the furnace were operated with liquor pressure of 85 psi and maintained a firing rate of 9.5 gpm of liquor at 62.7 per cent solids and 182° F. At this firing rate with liquor alone, the boiler operated continuously at 125 per cent of rating until the supply of liquor to the unit was exhausted. Ignition of the liquor at this rate was better and there was very little, if any, deposition of ash on the furnace floor.

At this point in the experiments, an effort was made to further improve the operation with liquor firing by installing an additional length of steam coil in the liquor storage tank in an attempt to increase the temperature of the liquor to 200° F and installing a unit heater at the inlet to the forced



draft fan to raise the temperature of the combustion air.

Upon checking for improvement from this additional equipment, it was found that the air heater raised the temperature of the combustion air from 75° F to 147° F. But, the additional length of steam coil in the liquor storage tank did not appreciably increase the temperature of the liquor which leveled off at 189° F. Later, when firing liquor alone at an average rate of 9.9 gpm an average boiler rating of 145 per cent was maintained until the supply of liquor was exhausted.

During this run, when firing liquor at the higher rate, char built up on the sloping, brick lined furnace floor and was removed by air lancing about every ten minutes. This build-up was produced by the liquor spray striking the furnace roof and falling to the floor before it was ready to burn. The wide angle at which the liquor left the sprayer plate was the principle cause of this deposition of liquor on the furnace arch. At the end of the run, new sprayer plates were installed which had an included spray angle of 45 degrees instead of the former 70 deg. angle.

Having completed the major changes for improving the operation of this converted boiler unit, a demonstration of firing liquor without auxiliary fuel lasted for 2 hours and 42 minutes until the liquor supply was exhausted. As usual, the furnace was first preheated by firing oil with two burners located at the front of the furnace and those burners were removed immediately after starting to fire liquor. Liquor was fired with two opposed Y-jet steam atomizing burners, equipped with the new 45 deg. angle sprayer plates from the rear of the furnace toward the front wall. Liquor of 61.7 per cent solids at a temperature of 194° F was burned in suspension at a rate of 5.2 gpm with liquor atomizing pressure of 65 psi. There was no ash build-up on the furnace floor and only occasional adjustment of steam atomizing valves was required to maintain the desired atomization of a total of 855 gallons of liquor burned for a steam generation equivalent to 92 per cent of boiler rating.

After the unit had cooled, the furnace and boiler were inspected and ash samples were collected from various sections of the unit. Laboratory analysis of the ash showed the following:

TABLE I

Laboratory Ash from Liquor	
Initial Deformation—Reducing—deg. F.	2710
Initial Deformation—Oxidizing—deg. F.	2600
Fluid Temperature—Reducing—deg. F..	2730
Fluid Temperature—Oxidizing—deg. F..	2620
Ash from Secondary Furnace	
Initial Deformation—Reducing—deg. F..	2650
Initial Deformation—Oxidizing—deg. F.	2690
Fluid Temperature—Reducing—deg. F..	2670
Fluid Temperature—Oxidizing—deg. F..	2710
Per cent Carbon in Ash.....	nil

Later, a new and larger liquor feed pump was installed to deliver liquor to the burners and a direct steam liquor heater consisting of a ¾ in. pipe having ⅛ in. holes on 1 in. centers drilled in two rows at an angle of 45 deg. to each other was located near the bottom of the storage tank. This liquor heater raised the temperature of 790 gallons of liquor from 119° F to 137° F in 20 minutes causing dilution of the liquor from 61.7 per cent to 60.5 per cent solids. The steam also provided a good stirring action. At a later time, the temperature of the liquor was increased from 134° F to 200° F in 1½ hrs. with a sacrifice in liquor concentration from 60.5 per cent to 58.5 per cent solids.

At this point in the experiments, the unit was operated to demonstrate the limits of flexibility when firing liquor without the addition of auxiliary fuel. During the first period, liquor was fired at the rate of 3.0 gpm and generating steam at a rating of 50 per cent of boiler capacity. Ignition was steady and so the liquor firing rate was reduced progressively. The furnace gradually cooled, the flames changing from a bright orange to dull orange in color, the ash particles become larger in size and more of them reached the rear of the furnace before burning out and ignition began to fluctuate, gently at first and then more violently, until at a liquor firing rate of 1.3 gpm the furnace was cooling faster than it was being heated and steam generation had dropped to 15 per cent of boiler rated capacity. As the final step in this demonstration, the liquor firing rate was increased from the 1.3 gpm to 9.0 gpm in seven minutes and steam generation responded without using auxiliary fuel and increased from 15 per cent to 125 per cent of boiler rated capacity. This demonstrates the fact that combustion without auxiliary fuel is quite stable.

As a final demonstration in these experiments, the unit was operated continuously over a period of 20 hours by firing liquor without the aid of a supplementary fuel until the supply of evaporated liquor was entirely exhausted. Prior to this experimental run, all of the refractory was removed from the grates of the "V" type stoker excepting an 18-inch wide portion at the top of each inclined side. During the experiment, two "Y" jet steam atomizing nozzles were used and located at the rear of the furnace on opposite sides and fired toward the front of the furnace so that the incoming liquor spray passed through the reversed flow of the hot gases. During this 20-hour period, an average of 5.2 gallons of liquor per minute was fired by the two nozzles with the liquor of 59.5 per cent solids preheated to 194° F. Combustion air, at room temperature, was induced into the primary furnace by natural stack draft, and this unit which had been converted from coal firing to liquor firing, generated an amount of steam equivalent to 85 to 100 per cent of the boiler rating. This demonstration showed that liquor at reasonable concentrations can be fired over an extended operating period without the help of an auxiliary fuel.

Test Results

During the several experimental runs, a considerable amount of data and liquor samples was taken to cover the pertinent information of the operation. From this information, we have selected the following as being representative of the operation as a whole.

TABLE II

Liquor Analysis:	
Moisture—%	38.3
Carbon—%	27.8
Hydrogen—%	2.6
Total Sulfur—%	3.4
Ash—%	9.2
Oxygen & Nitrogen—%....	18.7
Heating Value—Btu per lb. as fired	4710
Duration of run—hours firing liquor alone	20
Liquor firing rate—gallons per minute	5.2
Liquor temperatures—degrees F.....	194
Steam generation—lb. per hour (actual)	8,830
Steam pressure—psig	125

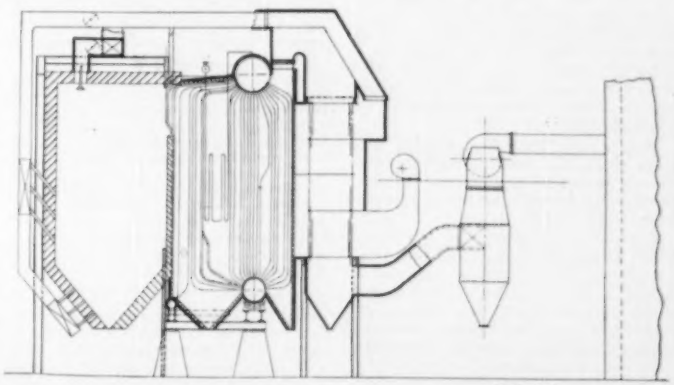


FIGURE NO. 8

Steam temperature—degrees F.	Saturated
Feed Water temperature—degrees F.	210
Combustion air temperature—degrees F.	80
Excess air—per cent	48

From the above data, we have calculated the following as being representative of the results when firing calcium base sulfite liquor experimentally without auxiliary fuel in this converted coal firing boiler unit.

TABLE III

Liquor fired—lbs. per hour	3590
Liquor solids fired—lbs. per hour	2215
Equivalent steam generated—lbs. per hour F & A	9236
Lbs. of steam F & A per lb. of liquor	2.57
Lbs. of steam F & A per lb. of liquor solids	4.17
Lbs. of steam F & A per ton O. D. pulp	10,760

A review of the above data indicates that this experimental unit operated at a boiler efficiency of 53 per cent during the demonstrations. However, this indicated boiler efficiency should not be considered too critically because these experiments were conducted to demonstrate that calcium base sulfite liquor can be burned satisfactorily without the aid of a supplementary fuel rather than to determine the efficiency of this particular unit when firing liquor. Any steam generating unit will necessarily operate at a lower efficiency when firing liquor than would be true with the same unit firing conventional fuels. Heat losses from the combustion of a liquor, derived from the digestion of wood for pulp, are inherently high due to the high moisture and hydrogen content of the liquor. It is acknowledged that this experimental unit was not installed or equipped to burn liquor efficiently but, had it been a unit designed with practical heat absorbing components, it is expected that efficiencies of 69 to 72 per cent would have been realized and steam produced equivalent to that generated if burning 24,000 pounds of coal.

Conclusions

The above test results together with the experience from the several experimental runs under varying conditions indicate conclusively that calcium base sulfite liquor can be burned in a practical manner in a properly designed boiler unit without the necessity of firing in conjunction with an auxiliary fuel.

It is believed that the following features of design should be incorporated in any proposed commercial heat recovery unit for the disposal of calcium base sulfite liquor.

1. The feature of spraying the liquor in a U-shaped pattern, thereby, reversing the flow of the burning liquor through the incoming liquor spray seems highly desirable from the standpoint of drying the liquor in flight within a turbulent body of combustion with normal excess air.

2. A properly designed refractory furnace appears to be required to maintain high temperatures for complete combustion of a fuel having a relatively high moisture content.

3. A gas air heater is essential as an efficient heat absorbing component to maintain the combustion air at relatively high temperatures for increasing the available heat input to the furnace and accelerating the rate of drying and combustion of the liquor particles.

4. Steam atomizing burners are satisfactory for atomizing the liquor for good suspension burning at liquor pressures of 65 to 90 psig combined with steam pressures of 85 to 10 psig.

5. Liquor should be maintained at elevated temperatures for satisfactory firing, preferably in some manner which does not cause excessive dilution of the liquor.

This leads to two suggestions for arrangement of boiler units which incorporates the above suggestions for firing calcium base sulfite liquor.

1. An arrangement, shown in *Figure 7*, whereby an existing power boiler can be converted to calcium sulfite liquor firing by installing a new furnace and air heater and dust collectors. This unit, when firing liquor at 65 per cent solids and having a heating value of 5020 Btu per pound of liquor as fired, will give an expected performance as follows in *Table IV*.

TABLE IV

Liquor burned—Pounds per hour	5,630
Steam generated—Pounds per hour (actual)	19,640
Steam pressure—Boilet outlet—psi	110
Steam temperature—Boilet outlet—deg. F.	Saturated
Feed Water temperature—deg. F.	210
Temperature of Air—Lv. airheater—deg. F.	615
Temperature of Gas—Lv. airheater—deg. F.	465
Boiler efficiency—per cent	69

2. An arrangement for a new high pressure recovery unit shown in *Figure 8* suitable for use with a turbo-generator for generation of electric power, will operate with an expected performance as shown in the following *Table V*, when firing liquor of 64 per cent solids and having a heating value of 5020 But/per pound of liquor as fired.

TABLE V

Liquor burned—pounds per hour	11,300
Steam generated—Pounds per hour (actual)	34,800
Steam pressure—Superheater outlet—psi	420
Steam temperature—Superheater outlet—deg. F.	740
Feed water temperature—deg. F.	220
Temperature of air—Lv. airheater—deg. F.	454
Temperature of gas—Lv. airheater—deg. F.	388
Boiler efficiency—per cent	72.4

Either of these arrangements, depending upon the individual requirements of the calcium sulfite pulp mill, will satisfactorily dispose of the excess of calcium base sulfite liquor.

CANADIAN-BRITISH TRADE

OTTAWA—Although Trade and Commerce Minister Howe has made it clear that Canada no longer will merely suggest that Britain allow more Canadian shipments to enter that country but rather demand such action, it is learned that, as far as the pulp and paper industry is concerned, this getting "tough" policy towards sterling areas may not bring any serious changes since for certain products of this industry, markets are available without more orders from overseas. Indeed, the industry is having a most difficult time to fill orders on hand.

Mr. Howe's statement is being coupled with another statement just made by the International Monetary Fund wherein it is indicated that certain sterling countries, including Britain, are in a balance of payment position now which no longer justifies discriminatory import restrictions against the dollar area.

It is also known that strong pressure is being exerted in Britain against the British Government's newsprint import policies since sources of supply aside from Canada have been unreliable and disappointing to such an extent that there is open revolt against the policies. In addition, stocks of newsprint in Britain are very low, though allocations to British publishers already are described as "grim" with newspapers there back to the wartime system of rationing.

It is heard here that British newsprint users would like the British Government to follow policies which would enable long-term contracts to be offered to Canadian newsprint suppliers or other inducements so that British users would be assured of their supplies and Canadian producers of their market abroad, even if Canadian producers in some cases might have to divert such newsprint from other markets in order to fill the British demands. It is even feared that it may be too late to arrange such contracts with Canadian newsprint firms due to commitments in other foreign markets as well as domestic customers. It is held here that behind the recent outbreak in the British House of Lords against Britain's present newsprint import policies in regard to Canadian producers, may be this fear of inability to arrange such contracts if Britain waits too long to conclude such long-term contracts.

Consequently, it is understood that demands for new arrangements with Canadian producers may be in the making so that, unlike exports of other industries, there appears to be no need for any added official pressure to increase pulp and paper industry's shipments to British market at present. It is understood, however, that Canada undoubtedly will insist on more British buying of other products in the Canadian market.

Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

United States

U.S. 2,525,345 — Machine for Rupturing Paper and the Like for Testing Purposes. Raymond E. Getchell, Holyoke, Mass., assignor to B. F. Perkins & Son, Inc., Holyoke, Mass. Filed May 20, 1948 — Issued October 10, 1950.

A testing machine of the class described comprising in combination, a base construction provided with a horizontal bore for a main piston and a vertical bore separate therefrom for a clamp piston and having a platform for a specimen, said base having a separate chamber provided with an open upper side in said platform and provided with a connection between said chamber and horizontal bore, a connection for fluid between said bores, a distendable diaphragm over and closing the open upper side of said chamber, a piston in said vertical bore having clamp means extending therefrom for clamping a specimen to be tested to said platform over said diaphragm, a main piston in said horizontal bore, all adapted and arranged whereby fluid in said horizontal bore may be displaced by the piston therein into said vertical bore and chamber, and valve means in said first-named connection arranged and adapted to permit fluid to flow therethrough when at a predetermined pressure.

U.S. 2,525,594 — Deinking Waste Paper. Francis L. Fennell, Niagara Falls, N. Y., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 6, 1947 — Issued October 10, 1950.

A process for deinking waste paper composed of magazine stock containing clay filler which comprises pulping said paper in an aqueous sodium peroxide solution consisting of water, sodium peroxide and caustic soda, and containing an amount of said peroxide equal to 0.25% to about 3% of the dry weight of the paper and having an alkalinity equivalent to about 2% to 8% by weight of caustic soda based on the dry weight of the paper, to a pulp consistency of about 2 to 15%, maintaining the pulp at a temperature of about 140 to 160° F. for 1 to 2 hours and then screening and washing the pulp sufficiently to remove at least a major portion of the alkali present.

U.S. 2,525,735—Log Loader. Robert Charles Symons, Ottawa, Ontario, Canada, assignor to Timberland Equipment, Inc., New York, N. Y. Filed February 3, 1948 — Issued October 10, 1950.

In a log loader of the type which may be mounted on a carrying rack or the like, the combination of, a rigid unitary loading frame assembly which is swingably mounted to be elevated from a horizontal log-receiving position wherein it is adapted to receive logs beneath the level of the rack to a substantially vertical log-discharging position wherein it deposits the logs onto the rack, a power unit operatively connected to said loading frame and adapted to elevate the loading frame, a controller to control said power unit, and an auxiliary controller operatively related to said loading frame to be operated by the arrival of the loading frame to its elevated position and effective to render the power unit inoperative.

U.S. 2,525,892 — Refining Tall Oil. Louis E. Gates and Lee A. Radeker, Canton, N. C., assignors to The Champion Paper and Fibre Company, Hamilton, Ohio. File March 12, 1947 — Issued October 17, 1950.

In the process of refining tall oil the steps which comprise adding to the tall oil a material from the group consisting of orthophosphoric acid and its acid salts in an amount equivalent to not more than 0.3% of orthophosphoric acid on the weight of the tall oil, heating the mixture to a temperature not exceeding about 350° F. and passing a stream of non-oxidizing gas through the mixture.

U.S. 2,526,125 — Paper Products and Methods of Making the Same. Carleton S. Francis, Jr., West Harwich, Mass., assignor, by mesne assignments, to American Viscose Corporation, Wilmington, Del. Filed May 25, 1942 — Issued October 17, 1950.

In a process for making a paper product, the steps comprising forming an aqueous suspension of cellulosic paper-making fibers of paper-making length and water-insoluble preformed, extruded thermoplastic resin fibres of paper-making length while maintaining said resin fibers in fibrous form, said resin fibers being formed from a copolymer of vinyl chloride and vinyl acetate and being normally non-tacky, flexible, and tough, and being rendered tacky at a temperature below that at which the paper-making fibers are damaged; removing water from said suspension to deposit said paper-making and said resin fibers in the form of a paper product; and heating said product to effect a tough, pliable, water-resistant bonding of fibers in said product, without destruction of the fibrous structure of said resin fibers.

U.S. 2,526,185—Folded Fibrous Material Product. Norval F. Wilson, East Alton, Ill., assignor to Alton Box Board Company, Alton, Ill. Filed June 3, 1944 — Issued October 17, 1950.

A panel formed from a piece of fibrous sheet material comprising a display face portion, two end flap portions formed integrally with the display face portion and adapted when folded back to cooperate to cover substantially the entire back surface of the display face portion, two side flap portions also formed integrally with the display portion and adapted when folded back to cover the back surfaces of said end flap portions, means cementing substantially the entire surface of each turned-back portion securely to the juxtaposed part, and means serving to waterproof the sheet material of the panel said end flap portions and said side flap portions when folded providing said display face portions with a smooth folded perimeter to minimize absorption of moisture by said display face portion when exposed to the weather.

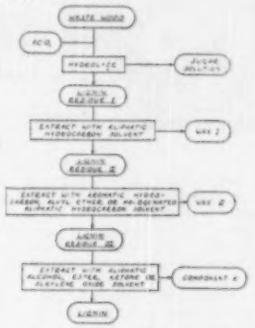
U.S. 2,526,439 — Coating Compositions. Jack T. Thurston, Riverside, Conn., assignor to American Cyanamid Company, New York, N. Y. Filed December 23, 1946 — Issued October 17, 1950.

A coating composition comprising an aminoplastic resin selected from the group consisting of urea-formaldehyde resins and melamine-formaldehyde resins, in a volatile organic dispersion medium, and 1%-5% of a phosphoric acid derivative of a saturated hydroxy aliphatic ester containing 4-8 carbon atoms, wherein said hydroxy group is attached to the acid portion of said ester.

U.S. 2,526,598 — Process for Preparing Coating Color. William H. Barrett and Edgar Zimmerman, International Falls, Minn., assignors to Minnesota and Ontario Paper Company, Minneapolis, Minn. Filed November 2, 1942 — Issued October 17, 1950.

A process of preparing mineral coating composition comprising, introducing into a container a selected quantity of starch, protein, pigment and water; continuously withdrawing the material from the container; applying high shearing and centrifugal force to the mixed material at the same time while the material is passing through a restricted passage, and then heating the moving material to a cooking temperature.

U.S. 2,526,607 — Waxes and Their Productions From Wood Waste. Ervin F. Kurth, Corvallis, Oreg., assignor to State of Oregon, acting by and through the Oregon State Board of Forestry. Filed April 5, 1948 — Issued October 17, 1950.



The process for the production of wax from wood which comprises hydrolyzing the cellulose and hemicellulose content of the wood with acid, separating the resulting sugar-containing solution from the resulting lignin-containing solid residue, and solvent extracting the said residue for recovery of wax therefrom.

U.S. 2,526,638 — Paper Treated with Formaldehyde and a Polymeric Polyamine. Martin E. Cupery, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 3, 1949 — Issued October 24, 1950.

Paper treated with formaldehyde and a polymeric polyamine in solution, said polymeric polyamine having a main polymer chain consisting solely of carbon atoms and containing a plurality of amino groups and being selected from the class consisting of polymeric polyamines in which the amino nitrogen has at least one hydrogen atom and is directly attached by a single bond to a carbon atom of the main polymer chain and polymeric polyamines containing primary amino nitrogen atoms linked directly by a methylene group to a carbon atom of the main polymer chain.

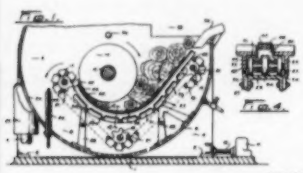
U.S. 2,527,057 — Jute Fiber-Coating Resinous Material and Process of Making Same. William B. Canfield, Montclair, N. J., assignor, by direct and mesne assignments, of one-half to Montclair Research Corporation, a corporation of New Jersey, and one-half to Ellis-Foster Company. Filed

January 8, 1948 — Issued October 24, 1950.

An emulsifiable composition adapted to deposit a non-tacky flexible coating on jute yarn, comprising the permanently fusible resinous reaction product, having an acid number of 10 to 20, and a softening point of 80° to 90° C., obtained by heating, at between 250° C. and 300° C., 1 mole of pentaerythritol, 2 moles of a mixture of tall oil and rosin, and 1 mole of a mixture of phthalic anhydride and maleic anhydride, the mixture of tall oil and rosin comprising 30% to 40% fatty acids and 70% to 60% rosin acids, and the mixture of phthalic and maleic anhydride comprising from 80% to 95% phthalic and between 20% and 5% maleic anhydride.

Canadian

Can. 468,646—Pulp Grinders. Gilbert H. Bancroft, Vancouver, British Columbia, Canada, assignor to Engineering & Machinery Ltd., Vancouver, British Columbia, Canada. Filed October 12, 1948 — Issued October 10, 1950.



468646

A pulp grinder comprising a pulp chamber having a log inlet and a pulp discharge outlet, a grinding wheel rotatable within the chamber, a plurality of tracks extending transversely under the grinding wheel, said tracks being disposed with respect to the periphery of the wheel to define a tapered log-receiving pocket having its apex adjacent said periphery, and means for urging logs along said pocket and into grinding contact with the wheel.

A pulp grinder comprising a pulp chamber having a log inlet and a pulp discharge outlet, a grinding wheel rotatable within the chamber, a plurality of tracks extending transversely under the grinding wheel, said tracks being disposed with respect to the periphery of the wheel to define a tapered log-receiving pocket having its apex adjacent said periphery, and means for continuously urging logs along said pocket and into grinding contact with the wheel.

Can. 468,703 — Packing Boxes or Containers. Kenneth T. Buttery, Kalamazoo, Michigan, U.S.A., assignor to Sutherland Paper Company, Kalamazoo, Michigan, U.S.A. Filed May 1, 1948 — Issued October 10, 1950.

A packing box comprising an integral blank provided with a central top member, side walls connected to the edges of said top member, side wall flaps connected to opposite side edges of a pair of said side walls at the corners of the box and being arranged in overlapping relation to and within the other pair of side walls, and bottom forming flaps extending inwardly from the lower edges of said side walls and being in interconnected pairs to provide a closure for the bottom of the box, the hinging connections for said bottom flaps to their respective walls being substantially less in length than the width of the side walls to which they are connected and in upwardly offset relation to the bottom edges of the side walls and the side wall carrier flaps thereby providing angular feet at the corners of the box, the feet of the side walls overlapping said side wall flaps being cut from bottom forming flaps of such side walls providing bottom ventilating openings at the corners of the bottom, the last-mentioned feet being disposed in overlapping relation to said angular feet.

Can. 468,704—Cellular Cartons. Kenneth T. Buttery, Kalamazoo, Michigan, U.S.A., assignor to Sutherland Paper Company, Kalamazoo, Michigan, U.S.A. Filed May 1, 1948 — Issued October 10, 1950.

Also Nos. 468,704; 468,705; 468,706; 468,707; 468,708; 468,709; 468,710; 468,711.

Can. 468,719 — Methods and Means for Producing Milk of Lime and for Producing White Liquor and Lime Carbonate Sludge. Robert S. Walker, Allentown, Pennsylvania, U.S.A., assignor to Traylor Engineering & Manufacturing Company, Allentown, Pennsylvania, U.S.A. Filed May 20, 1946 — Issued October 10, 1950.

The method of slaking lime which comprises continuously feeding lime at a constant, predetermined rate into a slaking zone, continuously supplying a slaking liquid to the lime in said zone, continuously agitating the lime and liquid in said zone, controlling the rate of the supply of said liquid in accordance with the temperature of the material in said zone to maintain continuously substantially the optimum temperature to produce a product which is a viscous, completely slaked lime slurry and which has lime particles of the desired size and shape, continuously moving the lime and liquid and said slurry through the slaking zone by the force of the incoming lime and liquid and by the agitation in the zone, continuously discharging the slaked lime from said slaking zone into a diluting zone, continuously adding a diluting liquid to the slaked lime in the diluting zone in an amount to produce a milk of lime of the desired consistency, and continuously withdrawing the milk of lime from the diluting zone.

Can. 468,721 — Fibrous Pigments. William L. Craig, Westport, Connecticut, U.S.A., assignor to R. T. Vanderbilt Company, Inc., New York, New York, U.S.A. Filed August 23, 1948 — Issued October 10, 1950.

Highly pigmented cellulosic fibrous pigments in the form of pigmented cellulosic fibres containing an amount of finely divided precipitated calcium, barium or zinc pigment in excess of the dry weight of the fibres, said fibrous pigments being produced from swollen, hydrated and gelatinized cellulosic fibres containing a soluble calcium, barium, or zinc salt largely within the gelatinized fibres by reaction of another soluble salt therewith to form the pigment, and said finely divided pigment being precipitated largely within said fibres as well as on and around said fibres, said fibrous pigments being in a dry state and forming a pulp-like pigmented fibre stock on admixture with water.

Can. 468,737—Production of Creped Foil. Harold R. Butler, Brampton, Ontario, Canada. Filed November 27, 1948 — Issued October 17, 1950.

The method of producing creped metallic foil comprising, laminating a sheet of the foil to a wider sheet of cellulosic fibrous material with a heat and moisture resistant adhesive so as to leave strips of uncovered cellulosic fibrous material free of adhesive at both sides of the sheet of foil, and creping the laminated sheets.

The method of producing creped metallic foil comprising, laminating a sheet of the foil to a wider sheet of cellulosic fibrous material with a heat moisture resistant adhesive to form a laminated web having strips of uncovered cellulosic fibrous material free of adhesive at both sides of the sheet of foil, immersing the laminated web in a bath of hot liquid so as to wet the sheet of cellulosic fibrous material and fully saturate the strips of uncovered cellulosic fibrous material, squeezing out excess moisture, applying the sheet of cellulosic fibrous material to a heated creping roller to which the web, including the said strips, adheres, and engaging the web with a creping knife to crepe the web.

Can. 468,763 — Methods and Wrapping Material for Wrapping Blocks of Butter, Margarine, Edible Fat and Similar Fatty Substances. Carl Sorensen, Copenhagen, Denmark. Filed January 9, 1947—Issued October 17, 1950.

In wrapping regularly-shaped pieces of fatty substances, the use of a wrapping material consisting of a layer of paper of a thickness between 0.03 and 0.07 mm. laminated on both sides with an adhering foil of aluminum of a thickness between 0.006 and 0.01 mm. the composite layer being coated on both sides with at least one layer of salt-, acid-, and moisture-proof lacquer.

Can. 468,816 — Production of Resin Adhesives and the Utilization Thereof in the Bonding of a Plurality of Bonded Members. Philip H. Rhodes, Butler, Pennsylvania, U.S.A., assignor, by mesne assignments, to Koppers Company, Inc., Pittsburgh, Pennsylvania, U.S.A. Filed February 25, 1944 — Issued October 17, 1950.

The method of bonding a plurality of cellulosic members one to the other comprising interposing between said cellulosic members a water-containing liquid resin adhesive and bonding medium containing a formaldehyde-liberating setting agent in the amount to set and harden the resin adhesive, together with a resin adhesive base formed by the admixture of a water-containing substantially neutral volatile liquid with the dihydroxy benzene-aldehyde resin condensation product of a dihydroxy benzene and a resin-forming aldehyde, said permanently fusible resin having a pH in 50 per cent aqueous solution outside a pH range of 2.5 to 6 and setting and hardening the adhesive and bonding medium of the resulting assembly at a temperature varying between 40° and 120° F., and within a time period of less than about 48 hours.

Can. 468,853—Bags and Methods of Making the Same. Stanley G. Yount, Los Angeles, California, U.S.A., and Paul R. Halstead, Compton, California, U.S.A., assignors to Southland Paper Converting Co., Los Angeles, California, U.S.A. Filed March 5, 1947 — Issued October 17, 1950.

A paper bag comprising when collapsed side walls lying in parellel planes, a bottom having a gusset fold parellel to said side walls and substantially coextensive in width with the latter, a sealed junction between said side walls parallel to the line of the gusset fold, the ends of said side walls being closed with the ends of said gusset folds included in the closing and said ends of the side walls having no gussets therein, said bag being adapted to open into a receptacle of substantially rectangular cross section with parallel side walls and parallel end walls, the latter being formed from end portions of the side walls.

UNION BAG BOOSTS WAGES

HUDSON FALLS, N. Y.—A new contract gives employes of the Union Bag & Paper Co. plant here a five percent wage increase, retroactive to October 1. The agreement also provides for six paid holidays, instead of four, and improved vacation schedules for more than 400 members of Locals 2 and 23 of the AFL Brotherhood of Pulp, Sulphite and Paper Mill Workers.

SUPPLIERS

ALLIS-CHALMERS MANUFACTURING CO. has opened a branch office at 269 Water street, Augusta, Maine, under the management of D. P. Appleton.

B. F. GOODRICH CO. announces that George W. Vaught, financial vice-president since 1940, will retire on December 31.

GENERAL ELECTRIC has named J. T. Farrell assistant to the manager of sales of its Small and Medium Motor Divisions. In addition to specific assignments, he will have supervision of the Marketing and Promotion Division and a newly-created Gear-Motor and Packaged Drive Sales Division.

Concurrently, the appointments have been announced of Howard W. Bennett and Paul D. Ross as managers, respectively, of the new Gear-Motor and Packaged Drive Sales Division and another new group, the Erie (Pa.) D-C Armored Motor Sales Division.

The former Gear-Motor Sales Division and D-C Motor Sales Division have been dissolved. The new Gear-Motor and Packaged Drive Sales Division will be responsible for the sale of all gear-motors, mechanical drives sold with motors, and packaged drives. The new Erie division will handle the sale of d-c armored motors. Products of the discontinued D-C Motor Sales Division that are not specifically assigned to either of the two new divisions will be transferred to the Lynn (Mass.) Motor Sales Division, it was said.

W. & L. E. GURLEY, Troy, N. Y., has appointed Lester C. Higbee director of engineering.

CHARLES J. HAAS, INC., manufacturers of industrial chemicals, oils and greases, with manufacturing plant and offices at American & Cumberland streets, Philadelphia, announces that E. C. Barlow has joined their organization. Mr. Barlow was formerly with E. F. Houghton & Co. for 24 years in the capacity of sales manager for the Central Division, and was later brought into Philadelphia as assistant to the executive vice-president.

HEYDEN CHEMICAL CORP. announces that it will spend approximately $1,175,000 for additions to existing manufacturing facilities at its Garfield, N. J., plant. The principal items in the above total are a new power plant unit and new manufacturing units for the production of Pentaerythritol. It is estimated that the installations will be completed during the last quarter of 1951.

HOWE SCALE CO., Rutland, Vt., has appointed Walter F. Garlow as sales promotion manager.

HOOKER ELECTROCHEMICAL Co. announces the completion of new facilities for the increased production of caustic soda and chlorine at its Tacoma, Wash., plant. The occasion was marked by holding the regular monthly meeting of the board of directors Tuesday, October 31st, at the Tacoma plant rather than at the home offices, Niagara Falls, N. Y. The expansion of production facilities consists primarily of the installation of two circuits of the new Type S-3 electrolytic cells which have far greater capacity than the old cells replaced. In addition to the new cells, extensive additions have been made for treating and handling brine, for purifying and evaporating caustic soda, and liquifying chlorine. Triple effect pans have been installed for caustic evaporation and a new boiler supplies the additional steam requirements. Other facilities completed include a new cell construction and renewal building, additional storage tanks, enlarged water supply system, expanded dock facilities, and other facilities to handle the increased production. The additional production of caustic soda and chlorine is largely to meet the increasing requirements of pulp mills in the Pacific Northwest.

J. M. HUBER CORP. announces that Robert J. Casey has joined the company as a technical salesman for coating and filler paper clays.

LEWIS-SHEPARD PRODUCTS, INC., Watertown, Mass., and Crawfordsville, Ind., manufacturers of materials handling equipment, has appointed Howard M. Palmer general sales manager.

LINK-BELT CO., manufacturer of materials handling and power transmission equipment, has appointed Bertram V. Jones advertising manager, to succeed Julius S. Holl, deceased. Mr. John F. Kelly will continue in the capacity of assistant advertising manager.

MATHIESON HYPERCARBON CHEMICAL CORP., Baltimore, Md., has appointed L. E. Russell, former chemist and assistant sulphite superintendent with the St. Regis Paper Co., as director of market development. He has been manager of product development for the Mathieson corporation for two years.

F. H. McGRAW & CO., engineers and contractors, announce that their western office is now located in the Wasatch Oil Bldg., Salt Lake City, Utah.

MORNINGSTAR, NICOL, INC., of New York City, announces that Claude H. Detweiler, president of the Magic Valley Processing Co., Twin Falls, Idaho, has just appointed Morningstar, Nichol, Inc. exclusive Sales Agents for the Magic Valley Processing Co. which is reported the largest single unit producing Potato Starch in the United States today.

PENNSYLVANIA SALT MANUFACTURING CO. has announced the removal of their district sales office to Suite 1216 Builders Building, 28 North LaSalle street, Chicago, Ill.

The new office will be under the direction of George D. Grogan district sales manager for the company's Heavy Chemicals Department, and John C. Hampson, district sales manager for the Special Chemicals Department. Pennsalt is moving to the new location from 20 North Wacker Drive.

H. K. PORTER COMPANY, INC., has appointed B. C. Blake vice-president and general manager of Connors Steel Co., Division, Birmingham, Ala. He succeeds H. P. Bigler who recently resigned because of ill health. In his new position, Mr. Blake, formerly works manager of the company, will be responsible for the complete operation of the Connors Division with which he first became associated in 1929 in the structural engineering department. He will continue to headquarter at the Birmingham plant.

THE RUST ENGINEERING CO., its subsidiary companies and affiliates, honored five women and 121 men employes with gold emblems October 27 at a Founder's Day and Service Award dinner in recognition of long service with the companies.

CCC OFFERS GUM ROSIN

WASHINGTON, D. C.—Gum rosin offered in substantial quantity for sale for either export or domestic use, by Commodity Credit Corporation this month, drawing on government holdings.

A total of 100,000 drums of government-held gum rosin was offered for domestic sale at prices ranging from $8 to $8.50, according to grade, "as is" at storage yards in Georgia and Florida, and the same quantity at the same prices, for export sale.

Sales of gum rosin for export since January totaled 199,688 cwt., through October 19, the CC reported.

In addition, 600,000 lbs. of pearl type potato starch in bags and 5,500,000 lbs. powdered type, in bags, from government stocks were offered for either domestic or export sale, the price for the latter use being $5.10 per cwt., f.a.s. Boston, vessel, and for domestic sale, $4.50 per cwt., f.o.b. Maine shipping points, both carload lots.

12% SALES INCREASE

WASHINGTON, D. C.—Paper and related products wholesalers reported a 12 percent rise in sales for 9 months of 1950 over the corresponding period of 1949, in latest Bureau of Census returns.

September sales were 24 percent above the level a year earlier, but went down 4 percent from August this year.

September inventories were reported up 6 percent from a year ago, but 3 percent below the August level.

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

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KIDDER, PEABODY & CO.

Founded 1865

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New York and Boston Stock Exchanges and New York Curb Exchange

NEW YORK BOSTON
PHILADELPHIA CHICAGO

Sales and Branch Offices

Albany Newport
Altoona Providence
Baltimore Reading
Lowell Scranton
Minneapolis Springfield
New Bedford Wilkes-Barre

New York Teletype NY 1-193

Financial News

STOCK REPORT

	Per Share Earnings			
PREFERRED STOCKS	Calendar Year 1949	12 Mo. to Approx. 9/30/50	Indic. Annual Divid. Rate	Nov. 14 Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.14a	$3.75	$103⅝
Armstrong Cork Co. $4.00 Cum Conv.	40.95*	48.14a	4.00	112⅝
Celotex Corp. 5% Cum.	6.80c	8.75a	1.00	16⅜
Champion Paper & Fibre $4.50 Cum.	60.09f	97.79	4.50	106¼
Container Corp. of Amer. 4% Cum.	89.52	104.60a	4.00	104¼
Crown Zellerbach $4.20 Cum.	54.38c	61.85a	4.20	103½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	13.70	2.50	53
Flintkote Co. $4 Cum.	62.70	79.70	4.00	104½
Robert Gair Co., Inc. 6% Cum.	13.79†	17.21†	1.20	18⅝
International Paper Co. $4 Cum.	224.55	264.19a	4.00	105¼
Kimberly Clark Corp. 4% Cum.	85.27	117.03i	4.50	106¼
MacAndrews & Forbes 6% Cum.	61.59	63.03	6.00	142
Mead Corp. 4¼% Cum.	51.37	88.30	4.25	92½
Mead Corp. 2% Cum. Conv. 2nd	21.35*	36.20*	2.00	57¼
Pabco Products, Inc. 4% Cum. Conv.	56.46	124.88	4.00	99½
Rayonier Inc. $2 Cum.	9.54	17.45	2.00	34⅛
St. Regis Paper Co. 4.40% 1st A	30.74	52.38	4.40	95⅜
Scott Paper Co. $3.40 Cum.	51.15*	62.16*	3.40	98¾
Scott Paper Co. $4.00 Cum.	51.15*	62.16*	4.00	105¼
Sutherland Paper 4¼% Conv.	46.92	68.59	4.25	114
U. S. Gypsum Co. 7% Cum.	283.37	429.37	7.00	184½
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)17.15	2.00	22⅞
West Virginia Pulp & Paper 4½% Cum.	61.28c	61.06i	4.50	110¼
COMMON STOCKS				
APW Products Co.	(d)0.81	0.45a	—	5⅞
American Writing Paper Corp.	.04	0.86	—	7⅞
Armstrong Cork Co.	6.57	7.84a	$3.00	48⅝
Celotex Corp.	1.65c	2.20a	1.00	15⅛
Certain-Teed Prods. Corp.	2.84	3.43	1.00	14
Champion Paper & Fibre	5.15f	8.93	2.45	44⅝
Congoleum Nairn Co.	3.04	2.70a	2.0e	23⅜
Container Corp. of America	8.46	10.27	4.00	59
Crown-Zellerbach	6.02c	6.84a	2.00	43¼
Dixie Cup Co.	7.44	9.87	1.50	45⅛
Eastern Corp.	0.04	3.04	(h)	18⅜
Flintkote Co.	4.33	5.48	3.00	26⅞
Robert Gair Co., Inc.	2.11†	2.69†	0.70	10½
Great Northern Paper Co.	4.87	3.73	2.80	44⅜
International Paper Co.	7.12	8.14a	2.50	45⅞
Johns-Manville Corp.	4.83	6.38	2.50	44⅛
Kimberly Clark Corp.	5.29	6.66i	1.80	43¼
MacAndrews & Forbes Co.	3.64	3.74	3.00	40
Marathon Corp.	3.29c	4.13i	1.40	33⅛
Mead Corp.	4.10	7.32	2.20	23¾
National Container Corp.	0.95	1.34a	0.75	10⅜
Pabco Products, Inc.	0.85	1.95	0.60	16⅞
Rayonier, Inc.	4.75	9.73	2.50	43⅜
Ruberoid Co.	8.72	9.52	3.25	49¾
St. Regis Paper Co.	0.91	1.63	0.60	10⅛
Scott Paper Co.	6.07	7.12	3.60	43⅞
Sutherland Paper Co.	4.62	6.47	2.75	43¾
Union Bag & Paper Corp.	5.01	6.68	2.50	35¾
United Board & Carton	(d)1.61b	0.58j	—	13½
U. S. Gypsum Co.	13.51	17.87	10.00	112¾
United Wallpaper	(d)0.01	(d)0.57	—	2⅞
West Virginia Pulp & Paper	8.58c	8.36i	5.00	65¼

(a) 12 months to approximately 6/30/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(f) 9 months to 12/31/49
(h) Declared 25c payable Sept. 1, 1950
(i) 12 months to 7/31/50
(j) 12 months to 5/31/50
(*) Earnings per combined preferred shares
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

Flintkote Co. authorized the payment of a year-end dividend of $1 and a quarterly dividend of 50 cents on the common stock, both payable on December 11.

Rolland Paper Co., Ltd., has declared a dividend of 15c on common stock, payable December 15 to stockholders of record November 30.

Eddy Paper Co., Ltd., has declared a dividend of 25c on Class "A" stock, payable December 15 to stockholders of record November 15.

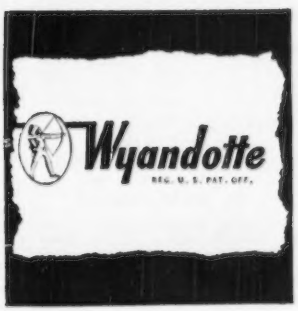
Union Bag & Paper Corp. sales in the third quarter of 1950 amounted to $20,978,558 compared with sales of $17,363,170 in the corresponding period of 1949 and with $18,518,461 in the quarter ended June 30, 1950.

Famous trademarks in paper

The growth and progress of the Paper Industry in the first half of this century offer a striking parallel to the history of one of its leading members, the St. Regis Paper Co.

Today, this long-established trademark identifies a wide range of papers designed for a multitude of special uses. Enamel, coated and groundwood printing, uncoated book, mimeograph, specialty papers, Kraft paper and multiwall bags — these and dozens of other quality products bear the familiar name, *St. Regis.*

...and paper making chemicals



Over the years, Wyandotte has taken an active interest in the development and manufacture of fine papers. Often, Wyandotte chemicals have been "tailored" especially to meet the exacting needs of the Paper Industry.

One outstanding example of this is Wyandotte Purecal-M (Precipitated Calcium Carbonate), a unique paper-coating pigment that furnishes high whiteness and top opacity to the coated sheet. This smooth-textured chemical is known for its freedom from grit and abrasiveness. Its uniformity and ease of formulation are unsurpassed. And it has the characteristics required for "on-the-machine" as well as "off-the-machine" coating.

We will be glad to supply you with complete information and technical data on Wyandotte Purecal-M. Just write us at the address below.

Wyandotte Chemicals Corporation
Wyandotte, Mich. • *Offices in Principal Cities*

SODA ASH • CAUSTIC SODA
BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE
CHLORINE • HYDROGEN • DRY ICE
SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE
PROPYLENE DICHLORIDE
AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Most orders accepted, however, at price prevailing on date of shipment. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton $100.00/110.00
Sheets ..... 115.00/ —

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— pr cwt., 40# base wgt.

Standard Wrapping Rolls ..... $7.00/$7.25
No. 1 Wrapping Rolls 7.75/ 8.00
Standard Bag 6.75/ 7.00

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd ..... $1.75 / —
Wh. No. 1 MG ..... 1.75 / —
Wh. No. 1½ ..... 1.65 / —
Wh. No. 2 ..... 1.55 / —
Kraft Non-Tar ..... 1.60 / —
White Non-Tar .....

Toilet— per case of 100 rolls—1 M sheets

Unbleached 4½x4½ ..... $5.90/ —
Unbleached 4½x5 ..... 6.05/ —
Bleached 4½x4½ 7.10/ 8.80
Bleached 4½x5 ..... 9.10/ —

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½ ..... $5.90/$6.25
Bleached 4½x4½ ..... 6.95/ —

Per Case of 100 rolls—1000 sheets

Facial, 4½x5, 2 ply ..... $8.95/$9.85

Paper Towels— per case of 3750

Wh. Jr. M'tif'd 9¼x9½ $5.65
Br. Sr. M'tif'd 10x12 ..... 4.00
Br. Jr. M'tif'd 9½x9¼ 3.50
Br. Jr. Sgl. fold 10x10¾ 3.35
Blchd. 7½x11, 24/25 rolls .....‡ $6.00/7.00

Manila, per cwt.

No. 1 Jute Tag sheets* $16.55/18.55
Reg. Jute M.F. 40-lb., sheets* 15.00/17.00
Wrapping Manila 8.75/ 10.50
Printing Manila 10.50/12.00
* Less usual allowance for rolls.

Gummed Tape— per bdl., 500 bdls. or more

90-lb. 375 ft. GSI ..... $6.90 / —
60-lb. 600 ft. GSI ..... 6.90 / —
35-lb. 800 ft. GSI ..... 7.93½/ —
35-lb. 500 ft. GSO ..... 5.98 / —

Boards, per ton—

Filled News ..... $97.50/ —
Plain Chip ..... 95.00/ —
Blchd. Mla. L-d. Chip 120.00/125.00
White Pat. coated .020 ..... 145.00/155.00
Kraft Liners 42 lb. 112.50/115.00
Kraft Corr. .009 ..... 117.50/126.00
Binders Boards ..... 135.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White. 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$64.55/$69.60
100% Rag	56.95/ 57.30
75% Rag	43.70/ 44.15
50% Rag	35.60/ 35.95
25% Rag	29.75/ 30.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$65.15/$66.35
100% Rag	56.20/ 58.75
75% Rag	44.95/ 46.20
50% Rag	36.98/ 37.30
25% Rag	31.00/ 31.35

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$18.15/$19.05
Plain	17.10/ 17.45

Ledgers	4 Ctns.
	per cwt.
Watermarked	$19.50/$20.30
Plain	18.55/ 18.75

White Book

Conversion Coated	Case
	per cwt.
No. 1	$21.65/$21.75
No. 2	20.15/ 20.40
No. 3	19.65/ —
Machine Coated	
No. 1	$16.90/ 17.15
No. 2	14.90/ 15.15
Uncoated	
No. 1 Antique (Watermarked)....	$17.15/ 18.65
Offset	16.15/ 16.90
A Grade E. F.	16.15/ —
A Grade S. C.	16.65/ 16.90
B Grade E. F.	15.40/ —
B Grade S. C.	16.15/ —

‡ Indicates a price change.

WORLD WOOD PULP MARKETS

Fourth Quarter Contract Prices, Per Short Air-Dry Ton

Varying freight allowances

	U. S.	Canadian	Swedish	Finnish	Norwegian
			Atlantic Ports		
Groundwood	$75.00/ —	$75.00/ 85.00	†$82.50/ —		
Sideruns Pulping News .	75.00/ —	75.00/ 85.00			
Soda, Bleached	130.00/ —	130.00/ —			
Sulphate, Bleached	128.00/167.50	141.00/ —	*165.00/167.50		Competitive
Sulphate, Unbl'd North'n		115.00/120.00	*135.00/165.00		
Sulphate, Unbl'd South'n	125.00/160.00				
Sulphite, Blchd. (S'ftw'd)	128.00/145.00	135.00/138.00	*160.00/ —		Competitive
Sulphite, Blchd. (H'dw'd)	145.00/ —				
Sulfite, Semi-blchd.	128.00/ —				
Sulphite, Unbleached ...		117.00/120.00	*138.00/165.00		
Sulphite, Unbl'd (Glassine)		121.00/ —	*142.00/150.00		

* On dock. † Delivered.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) ALL PRICES NOMINAL. SPOT OFFERINGS OR SPECIAL PACKINGS NOT INCLUDED.

	New York	Philadelphia	Boston	Chicago
	Nov. 6	Nov. 9	Nov. 10	Nov. 6
No. 1 Mixed Paper	$25.00/ 28.00	$28.00/ 30.00	$25.00/ —	$27.00/ —
Boxboard Cuts	20.00/ 28.00	28.00/ —	19.00/ —	31.00/ —
Mill Wrappers	22.00/ 35.00	33.00/ —	24.00/ 29.00	29.00/ —
No. 1 News	26.00/ 31.00	30.00/ 32.00	29.00/ —	30.00/ —
Over-issue News	29.00/ 36.00	38.00/ 40.00	25.00/ 27.00	33.00/ —
Corrugated Containers	35.00/ 38.00	38.00/ 41.00	36.00/ 38.00	38.00/ —
New Corrugated Cuts	40.00/ 45.00	nominal	35.00/ 40.00	48.00/ —
Double Kraft Ld. Corr. Cuts ...	80.00/ 85.00	nominal	70.00/ 80.00	100.00/ —*
100% Kraft Corr. Cuts.....	110.00/120.00	nominal	80.00/ 90.00	120.00/ —
Used Kraft Bags	60.00/ 75.00	nominal	50.00/ —	55.00/ —
No. 1 Brown Kraft Paper	70.00/ 75.00	nominal	50.00/ 60.00	55.00/ —
Super Resorted Br. Kraft	65.00/100.00	nominal	65.00/ 70.00	65.00/ —
New Br. Kraft Env. Cuts	125.00/130.00	nominal	110.00/115.00	130.00/ —
New Br. Kraft Cuts	120.00/130.00	nominal	85.00/ 90.00	120.00/ —
No. 1 Gdwd Shvs.	60.00/ 65.00	nominal	60.00/ —	35.00/ —
White Newsblanks	105.00/110.00	nominal	80.00/ —	95.00/ —
No. 1 Flyleaf Shvs.	80.00/ 85.00	nominal	65.00/ 75.00	100.00/ —
No. 1 Soft Wht. Shvs.	160.00/170.00	nominal	110.00/115.00	150.00/ —
Super Soft Wht. Shvs.	170.00/175.00	nominal	115.00/125.00	160.00/ —
Hd. Wht. Shvs.	175.00/185.00	nominal	125.00/140.00	165.00/ —
Hd. Wht. Env. Cuts	190.00/220.00	nominal	140.00/170.00	175.00/ —
New Manila Env. Cuts	120.00/125.00	nominal	90.00/100.00	100.00/ —
Col. Tab Cards	90.00/105.00	nominal	55.00/ 60.00	80.00/ —
Manila Tab Cards	135.00/150.00	nominal	100.00/110.00	150.00/ —
No. 1 Mixed Ledger	70.00/ 85.00	nominal	60.00/ —	80.00/ —
White Ledger	105.00/115.00	nominal	70.00/ 80.00	110.00/ —
No. 1 Book & Mag.†	35.00/ 40.00	nominal	30.00/ 35.00	30.00/ —
No. 1 Rep'd. Hvy. Books‡	50.00/ 55.00	nominal	40.00/ 50.00	50.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

No. 1 White Shirts	$17.00/$18.00
No. 1 Unblchd. Muslins	15.50/ 17.50
Blchd. Canton Flannels	15.00/ 16.00
No. 1 Lt. Silesias	10.00/ 11.00
No. 1 Lt. Prints	7.50/ 8.50
Wht. Bk. Blue Overalls (Blchable)	11.00/ 12.00
No. 1 Blue Overalls	5.00/ 5.25
Fancy Shirts	6.00/ 6.50
No. 1 Washables	5.00/ 5.50
Suntan Khaki Cuts	9.00/ —
Mixed Khaki Cuts	6.00/ 7.00
Corduroy Cuts	4.50/ 5.00
Cottonades	4.50/ 5.00
Blchd. Underwear Cuts	16.00/ 17.00
Unblchd. Underwear Cuts	15.00/ 16.00

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$4.50/$5.00
Cotton Pants & Overalls	3.75/ 4.25
Thirds and Blues, Repacked	3.50/ 3.75
No. 1 Roofing Rags	2.40/ 2.65
No. 2 Roofing Rags	2.00/ 2.25
No. 3 & 4 Roofing Rags	1.90/ 2.15
Roofing Bagging	1.90/ 2.15

New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$4.25/$4.75
New Mixed Cuttings	4.50/ 5.00
Light Silesias	7.50/ 8.00
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal

Fancy Shirt Cuttings	6.00/ 7.00
Light Prints	6.00/ 7.00
Bleachable Khaki, No. 1	5.50/ 6.00
Unbl. Khaki, No. 1	4.50/ 5.00

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	$6.50/$7.50
No. 2 White Cottons	5.50/ 6.00
No. 3 White Cottons	4.00/ 4.50
No. 4 White Cottons	3.50/ 3.75
Extra Light Prints	4.50/ 5.00
Old Light Prints	4.00/ 4.25
Med. Light Prints	3.50/ 3.75
Dutch Blue Cottons	3.75/ 4.00
Checks and Blue	3.00/ 3.50
Linsey Garments	2.75/ 3.00
Dark Cottons, European	2.25/ 2.50
Dark Cottons, Egyptian	2.15/ 2.30
Old Shopperies	2.10/ 2.25
New Shopperies	2.25/ 2.50

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$7.00/$8.00
Domestic Gunny, No. 1	7.00/ 8.00
Heavy Wool Tares	6.75/ 7.50
Foreign Manila Rope	4.25/ 4.50
Domestic Manila Rope	5.25/ 5.50
Jute Strings	6.25/ 6.50
No. 1 Sisal Strings	3.50/ 4.25
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	4.75/ 6.00
Domestic	5.50/ 6.50
Austr. Wool Pouches	6.75/ 7.50
New Burlap Cuttings	7.00/ 7.50

MATERIALS

Aluminum, sulfate:
coml. bags, wks. cwt. 1.65
iron-free c.l. 2.75

Alcohol, ethyl:
tax free, dms. c.l. gal. .62 / .97
deld. East Miss.

Alcohol, methyl:
Synthetic, Zone 1, dms.
c.l. fit. alld. gal. .41

Casein, acid-prec.:
dom. sh. pt. c.l. lb. .36 / .38
imp. ex dock lb. .34½/ .34¾

Caustic soda:
c.l. wks. solid, 76%, cwt. 3.35
flak. & grd. 100-lb. drums 3.75
liquid 50% tanks 2.55
liquid 70% tanks 2.65

China clay:
dom. air-float. filler, c.l. wks. ton 10.00
water-washed 11.00
coating 16.00 /30.00
imported, ex whse. short ton 15.20 /28.35

Chlorine:
single-unit tanks, works cwt. 2.70
multi-unit cwt. 3.20 / 4.40

Formaldehyde:
USP, inh. dms, c.l. wks. lb. .0600/ .0625
l.c.l. E. wks .0650/ .0675

Fuel oil:
Bunker C, No. 6 Cal. hvy
tanks, refinery bbl. 1.55 / 1.60
light bbl. 2.05 / 2.10

Hydrogen peroxide:
USP, 35% cbys. E. of Miss. lb. .24½/ .25½

Lime:
hydrated, bags, wks. Buffalo ton 13.50

Rosin:
B gum, drms, c.l. Savan. cwt. 4.10
G. H. I, K cwt. 7.86
FF, wood, do. cwt. 6.25

Rosin size:
70%, gum & pale grds, tank cars, south, sh. pt. cwt. 6.70 / 6.90

Salt cake.
dom. bulk, c.l. wks. ton 17.00
wks. frt. all ton 20.00 /22.00

Soda ash:
light, 58%, bags, wks. 1.50
bulk cwt. 1.20

Sodium silicate 40°:
turbid, c.l. wks. cwt. 1.20
l.c.l. wks. 1.55 / 1.95

Sodium peroxide:
dms. c.l. E. of Miss. lb. .19
l.c.l. do. lb. .19½/ .20

Soybean, protein:
chem. isol, wks. c.l. .lb. .24 / —
Cinn. and Chic.

Sulfuric acid:
60° Be. cbys. cl. wks. cwt. 1.75 / —
l.c.l. wks. cwt. 2.05 / 2.60

Sulfur:
crude, c.l. mines, contract, long ton 18.00 /22.00
f.o.b. vessels Gulf 19.50 /23.50
Export, f.o.b. Gulf 22.00 /25.00

Sulfur dioxide:
liquid, coml. cyl. wks. lb. .09
multi-unit cars lb. .0535

Starches:
pearl corn, bags, c.l. Chic. cwt. 5.62 / —
white dextrines, c.l. Chic. cwt. 6.89 / —
potato, Idaho, c.l. wks. cwt. 5.00 / —
potato, Maine, c.l. wks. cwt. 5.00 / —
tapioca, conv. dextrines cwt. 6.75 / 7.25
medium grds. Gulf and East Coast ports 5.75 / 6.25
low, Siam, on dock N. Y. 5.00 / 5.25 nominal

Talc:
domestic, 50-lb. sacks, c.l. wks. ton 25.00 /30.00

Titanium dioxide:
anastase, c.l. deld., bags. lb. .19½
l.c.l. deld. lb. .20 / .20½
rutile, c.l. deld. lb. .21½
l.c.l. deld. lb. .22½

N.B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending Nov. 11

Newsprint

R. A. Olsen Co., Newscarrier, Donnacona, 400 rolls.
News Syndicate Co., Ethel Tombs, Gatineau, 309 rolls.
R. A. Olsen Co., Kermic, Donnacona, 385 rolls.
News Syndicate Co., Elin Hope, Baie Comeau, 7669 rolls.
H. C. Craig, A.C.D., Donnacona, 457 rolls.
Montmorency Paper Co., Storfjeld, Botwood, 4106 rolls.
News Syndicate Co., Ted, Thorold, 2229 rolls.
Madden Reeve Angel & Co., Inc., Mormacpenn, Kotka, 1404 rolls.
(------), Fort Avalon, Cornerbrook, 3416 rolls.

Drawing Paper

Winsor & Newton, Queen Mary, Southampton, 13 cs.
H. Reeve Angel & Co., Inc., American Ranger, London, 2 cs.

Paper Towels

H. W. Robinson & Co., Queen Mary, Southampton, 5 cs.
H. W. Robinson & Co., American Ranger, London, 2 cs.

"WHO'S ZOO" IN THE PAPER TRADE—#1

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Writing Paper

H. W. Robinson & Co., Queen Mary, Southampton, 1 cs.
Chase National Bank, Ile de France, Havre, 2 cs.
American Express Co., Ile de France, Havre, 4 cs.

Gummed Paper

B. F. Drakenfeld & Co., Eastern Prince, Liverpool, 40 cs.

Tissue Paper

B. F. Drakenfeld & Co., Eastern Prince, Liverpool, 18 cs. (gauze carbonizing).

Photo Paper

Alco Photo Supply Corp., Mauretania, Southampton, 5 cs.

Stencil Paper

Elliott Addressing Machine Co., Pioneer Lake, Kobe, 10 cs.

Surface Coated Paper

Gevaert Co. of America, Houffalize, Antwerp, 21 cs.

Baryta Coated Paper

D. W. Kickey Forwarding Co., American Ranger, London, 50 rolls.

Tracing Cloth

E. Dietzgen & Co., Parthia, Liverpool, 10 cs. (bleached cotton).

Wrapping Paper

Paper Corp. of U. S., American Packer, London, 22 rolls.

Wallpaper

(———), Ile de France, Havre, 6 cs.
C. A. Haynes & Co., American Ranger, London, 27 pkgs., 22 cs.
Faub Hummel & Schnall, Parthia, Liverpool, 422 ctns.
C. A. Haynes & Co., Parthia, Liverpool, 118 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Ranger, London, 35 cs.

Paper Napkins

H. W. Robinson & Co., American Ranger, London, 2 cs.

Printing Paper

Stevens Nelson Paper Corp., American Ranger, London, 2 cs.
Wilmor & Newton, American Ranger, London, 3 cs.

Sulphite Paper

Resolute Paper Products Co., Mormacrio, Helsingfors, 107 rolls (unbleached).

Rembrandt Board

G. W. Millar & Co., Inc., N. Amsterdam, Rotterdam, 126 bls.

Cardboard

F. C. Strype, Inc., N. Amsterdam, Rotterdam, 16 cs. (white glazed opaline parchment).

Miscellaneous Paper

Grant Photo Products, Inc., American Ranger, London, 33 rolls.

Rags, Baggings, etc.

A. Siegle Corp., Eastern Prince, Liverpool, 172 bls. jutewaste.
Darmstadt Scott & Courtney, Boston City, Avonmouth, 157 bls. paperstock.
A. Siegle Corp., Boston City, Avonmouth, 252 bls. paperstock.
Castle & Overton, Inc., American Ranger, London, 98 bls. paperstock.
Loumar Textile By Products, American Ranger, London, 36 bls. paperstock.
(———), American Ranger, London, 43 bls. paperstock.
J. A. Manning Paper Co., American Ranger, London, 14 bls. paperstock.
J. Cohen & Son, American Ranger, London, 32 bls. paperstock.
(———), American Ranger, London, 62 bls. paperstock.
Jaffe Woolstock Co., Port Halifax, Melbourne, 27 bls. paperstock.
A. de Vries Trading Corp., American Clipper, Dunkirk, 54 bls. flaxwaste, 66 bls. rags.
(———), American Packer, Belfast, 197 bls. flaxwaste.
Castle & Overton, Inc., American Packer, Glasgow, 97 bls. paperstock.
(———), American Packer, Glasgow, 291 bls. paperstock.
J. P. Fleissig, Neptunia, Naples, 190 bls. cotton rags.
E. J. Keller Co., Inc., Enrico C., Genoa, 258 bls. jute rags.
Irving Trust Co., Enrico C., Genoa, 129 bls. old waste bagging.
D. Benedetto, Fernfjord, Genoa, 280 bls. rags.
Chase National Bank, Parthia, Liverpool, 13 bls. woolen rags.
J. Eisenberg, Inc., Parthia, Liverpool, 99 bls. woolen rags.
L. B. Lockwood, Parthia, Liverpool, 48 bls. woolen rags.
Spector Woolstock Corp., Parthia, Liverpool, 27 bls. new cuttings.
A. Siegle Corp., Parthia, Liverpool, 108 bls. paperstock.
(———), Parthia, Liverpool, 112 bls. bagging, 19 bls. rags.

Casein

Wilbur Ellis, Brazil, Buenos Aires, 600 bags.
H. S. Cramer, Brazil, Buenos Aires, 1500 bags.
The Borden Co., Brazil, Buenos Aires, 1030 bags.
Eugenio Lang, Brazil, Buenos Aires, 4000 bags.
Tupman Thurlow Co., Brazil, Buenos Aires, 200 bags.
The Borden Co., Mormacpenn, Buenos Aires, 500 bags.
F. H. Paul & Stein Bros., Mormacpenn, Montevideo, 1000 bags.
Gorlyn Plastic Corp., Port Halifax, Melbourne, 800 bags (rennet).

Woodpulp Boards

Jay Madden Corp., Mormacrio, Kotka, 1175 rolls.

IMPORTS AT ALBANY

Week Ending Nov. 11

Cellulose Sales Corp., Venezuela, Ostrand, 1200 bls. kraft sulphate pulp, 1500 bls. dry sulphite pulp.
Price & Pierce, Ltd., Venezuela, Wallvik, 19,300 bls. dry woodpulp.
National City Bank, Pankakoski, Rauma, 135 bls. prime extra strong unbleached sulphite pulp, 27 tons; 245 bls. prime bleached sulphite pulp, 40 tons; 5149 bls. prime strong bleached sulphite pulp, 849 tons.
Pulp Sales Corp., Pankakoski, Kotka, 3150 bls. prime unbleached kraft sulphate pulp, 510 tons.

IMPORTS AT NEWARK

Week Ending Nov. 11

National City Bank, Pankakoski, Rauma, 190 bls. prime bleached strong sulphite pulp, 31 tons.
Madden Reeve Angel & Co., Inc., Pankakoski, Kotka, 280 rolls newsprint.
Pulp Sales Corp., Pankakoski, Kotka, 1300 bls. prime unbleached kraft sulphate pulp, 260 tons.

IMPORTS AT BOSTON

Week Ending Nov. 11

Elliott Addressing Machine Co., Pioneer Lake, Kobe, 22 cs. Tengujo paper.
E. J. Keller Co., Inc., American Leader, Havre, 44 bls. rags.
Wilbur Ellis, Mormacpenn, Buenos Aires, 300 bags casein.

IMPORTS AT BALTIMORE

Week Ending Nov. 11

Pulp Sales Corp., Mormacrio, Kotka, 78 rolls paperwaste.
Pulp Sales Corp., Pankakoski, Kotka, 1945 bls. prime unbleached kraft sulphate pulp, 389 tons.

IMPORTS AT PHILADELPHIA

Week Ending Nov. 11

D. Galloway, American Clipper, Dunkirk, 106 bls. jutewaste.
(———), American Packer, Glasgow, 167 bls. paperstock.
Philadelphia National Bank, American Packer, Glasgow, 54 bls. paperstock.
(———), Fernfjord, Naples, 178 bls. old cotton rags.
Madden Reeve Angel & Co., Inc., Mormacrio, Kotka, 1305 rolls newsprint.
Pulp Sales Corp., Mormacrio, Kotka, 88 rolls paperwaste.
National City Bank, Pankakoski, Rauma, 156 bls. greaseproof prime sulphite pulp, 31 tons; 3160 bls. prime bleached strong sulphite pulp, 521 tons.

IMPORTS AT ALEXANDRIA

Week Ending Nov. 11

Madden Reeve Angel & Co., Inc., Pankakoski, Kotka, 1282 rolls newsprint.

IMPORTS AT NORFOLK

Week Ending Nov. 11

F. P. Gaskell & Co., American Packer, Glasgow, 50 cs. coated paper (for cigarette tips).
(———), American Packer, Glasgow, 240 bls. paperstock.
C. Smiles, City of Capetown, Calcutta, 100 bls. old jute rags.

FOREST MANAGEMENT LICENSE

British Columbia Pulp & Paper Co. Ltd. have signed a contract for the taking over of a forest management license from the B. C. government. Lawrence Killam, president of the company, signed the contract with the Hon. E. T. Kenney, Minister of Lands and Forests, and Dr. C. D. Orchard, Deputy Minister of Lands and Forests, acting for the government.

The license, the sixth granted by the province under The Forest Act, provides a perpetual source of supply of wood for the rayon pulp mill of the company at Port Alice. Means of maintaining the stand of timber on a "perpetual yield" basis are set out in the agreement.

Present at the ceremony were H. R. MacMillan, Dr. Lowell Beasley, head of the School of Forestry at the University of British Columbia; Bert Welch, M.L.A.; J. L. Gibson, M.P.; R. C. Buchanan and Cecil Killam, company directors; Peter McGhee, resident manager at Port Alice; Walter Warner, superintendent of company logging at Holberg, Quatsino Sound.

MERCHANTS

HUBBS ADDS 2 DIVISIONS

Hubbs & Corning Co., Baltimore, and Hubbs Paper Co., of Rochester and Syracuse, have joined the recently formed Hubbs Corp.

Initially, Hubbs Corp. included unification of all facilities of Charles F. Hubbs Co., industrial and specialty paper wholesalers, and Henry Lindenmeyr & Sons, well known fine paper house. Both organizations are located in New York City with branches in New York, Mineola, Cohoes, Newark, Trenton, Bridgeport, New Haven, Hartford, Boston, Syracuse, Rochester and Baltimore.

The new members of Hubbs Corp. will conform to the announced policy of maintaining their respective identities, and acting as divisions within the larger organizations. Under this arrangement, it will be possible to render a more efficient service to all customers of each of the four divisions, at the same time effecting desirable advantages in speed and economy in handling orders for diversified lines.

As in the case of Charles F. Hubbs Co. Division, and Henry Lindenmeyr & Sons Division, Hubbs & Corning Co. Division and Hubbs Paper Co. Division will continue to be managed and operated by their respective pre-unification staffs.

FINE PAPERS MOVES

Fine Papers, Inc., will move to a large new warehouse at 97 Railroad street, Rochester 9, N. Y., on December 4. The new telephone number is CUlver 6400.

NEW LITERATURE

Hildreth Press. Book, 582 pp., "Forest Management," by Herman H. Chapman, Professor Emeritus, Yale University. A complete treatise on the subject.

Supt of Documents. Series M 14 D-09, "Facts For Industry; Paper and Production, 1949; Preliminary Report."

National Foremen's Institute, Inc. Booklet, price 25c, 12 pp. reprint, "Sabotage — How To Guard Against It," by Harry D. Farren.

Baker Perkins, Inc. Illustrated Catalog, "Mixing and Kneading Equipment For Chemical Process Industries."

Wheelco Instruments Co. Bulletin TC-8, 42 pp., 1950 edition, "Wheelco Data Book and Catalog." Contains application recommendations, information concerning instrument sensing units and associated accessories.

Oliver United Filters, Inc. Bulletin No. 702, "Oliver Board Forming Machine — High Production of Board From Many Materials."

Hagan Corp. Bulletin 5450, "Ratio Totalizer." Shows construction, application and operating principles with sketches.

Westinghouse Electric Corp. Booklet, B-4428, 23 pp., "Westinghouse Dry-Type Transformers." Points out installation and maintenance advantages in industrial plants, mines, utilities; illustrates air-cooled transformers for every use.

Pittsburgh Plate Glass Co. Illustrated Manual, 64 pp., "Soda Ash." Devoted to soda ash production and uses, methods of manufacture, forms and grades, unloading and handling.

Eberbach & Son Co. Working Manual, 24 pp., Eberbach DYNA-CATH "Magnetic Mercury Cathode Apparatus." Presents performance data, theoretical applications, procedures, bibliography, operating instructions, construction diagrams.

Foxboro Co. Application Engineering Data Sheets, No. 260-2, "Automatic Digester Liquor Measuring System"; No. 260-8, "Raw Green Liquor Flow Control"; No. 260-11, "Paper Machine Flat Box Vacuum Control"; No. 260-12, "Paper Machine Stock Temperature Control."

Michigan Pipe Co. Folder, "Better Pipe To Better Your Industry." Engineering Bulletin No. 0-050, "Wood Stave Pipe, Wood Lined Pipe and Accessories"; Bulletin 325-140, "Friction

ELIXMAN
CORES
CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

Losses in Pulp and Paper Stock Lines using Michigan Wood Lined Pipe"; Bulletin No. 0-301, "Saran Rubber Lined Steel Pipe, Fabricated Pipe and Fittings."

Clark Equipment Co. Bulletin, "Roll Handling Revolutionized." Mechanical specifications on the new Bartel Device.

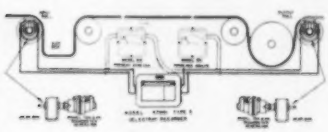
Carboline Co. New Product Data Sheet C-51, "Phenoline, A Brush-On Phenol Formaldehyde Coating." Discusses the advantages, limitations, corrosion resistance, uses, application and cost.

New Literature Correction: The October 26 issue of *Paper Trade Journal* contains a premature announcement of William Bond Wheelwright's book, "Practical Paper Technology." The manuscript is in the hands of The Riverside Press, Cambridge, scheduled for publication on January 20, 1951. Price $2.25.

NEW EQUIPMENT

Stretch Meter

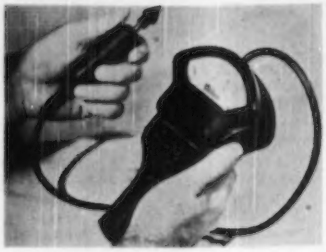
The percentage stretch or shrinkage of materials being processed through pairs of rolls turning at different speeds is indicated and automatically recorded by the new Tag-Weston recording speed-ratio tachometer. The



instrument provides a continuous record of roll speed ratio for paper, plastics, and like industries. Operated by two tachometer generators driven by the respective rolls, the new instrument consists essentially of a specially-developed ratio recorder. Ratio meter and recorder can be calibrated in terms of percentage shrinkage or stretch of the material passing through the rolls.

Electric Hand Tachometer

New speed measuring ranges are announced for the Metron Type 25D Hand Tachometer: 100-1000, 200-2000



and 500-5000 r.p.m. and f.p.m.; and 10-100, 20-200, 50-500 f.p.m. Having the same high accuracy and dependability as other Series 25, these new ranges are suited, without range extending adapters, for speeds encountered in motor and generator testing, process control, and maintenance work. Range extending adapters are available to measure speeds as low as 20 r.p.m. and as high as 50,000 r.p.m. for special applications.

Model P-Vibrometer

Vibrometer Model–P is an instrument for measuring the amplitude of machine vibrations. It is applied by holding in the hands against the vibrating machine. The width of oscillation of a light beam on a graduated ground glass scale indicates the vibration amplitude. Two models are available which magnify the vibratory motion 250 and 125 times respectively.

Flashlight batteries are housed within the instrument. A unique feature is a detachable probe 8" long with which measurements may be taken directly on the surface of a rotating shaft. It is useful also for reaching down into inaccessible or hot places. The probe is housed in a tube and runs in longitudinal ball bearings to minimize side friction. In common with other models, this model may be made into a component of the Davey Portable Balancing Equipment. The probe type head may be adapted to previous models of the Davey Vibrometer thus making a double purpose instrument.

Metlkos Brushes

A unique preservative and method of treatment that protects flat brushes from the chemicals involved, lengthening their life four times, has been developed for Metlkos brushes. Called "Lifewood," the chemical treatment protects the brush over and above the main requirements. It has a toxic effect on fungi and termites and resists stain, thereby eliminating destruction through wood decay or rot. By fully penetrating the wood, filling and sealing the porous cells, the wood is made water-repellent and resists leaching. After treatment, the brush is neither injurious to the handler nor to the product, and has no objectionable odor, it is stated. The process is said to be non-corrosive to metals, has maximum resistance to volatilization, and doesn't discolor wood unfavorably.

Static Locator

An electrostatic voltmeter used to locate areas of static electricity is now available for paper mills and other industrial plants where manufacturing processes generate troublesome static charges. The instrument provides an indication of the amount of electrical charge on moving or stationary equipment. The presence of these charges frequently slows production and constitutes a fire hazard. Readily portable (weight 3 lbs., 10 oz.), of sturdy construction, the instrument is extremely sensitive, with provision made to permit reduction of sensitivity to one tenth or one one-hundredth. Full sensitivity is employed for general area inspection, and the lesser sensitivities permit close examination without sending the meter needle off scale. A charged area can be quickly located and its extent accurately determined. Parts most likely to be affected by moisture and dust are sealed to insure trouble-free life. Power is self-contained.

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette	**Wax**	**Photographic**	**Jet Propulsion**
Condenser	**Grease Proof**	**Snap-out Forms**	**Aero-engine Parts**

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

NEW MATERIALS

Glacial Acrylic Acid

The first commercial production of glacial acrylic acid, a derivative of betapropiolactone is announced. It will be available in the glacial or "dry" form, with over 97 percent purity, and containing less than 1 percent water, and will be available in ton lots from a semi-works unit. Glacial acrylic acid has a molecular weight of 72.02, is a clear, colorless liquid boiling at 142°C. at 760 millimeters pressure. It melts at 12–13°C., has a specific gravity of 1.048 grams per cubic centimeter at 20°C., and a refractive index ($N\frac{20}{D}$) of 1.420. Chemically it is extremely reactive and polymerizes rapidly in the presence of oxidative catalysts.

The new glacial acrylic acid is expected to find wide usage in the plastics industry as a monomer, and in the chemical industry in general as an intermediate for the preparation of both esters and other derivatives. High molecular weight acrylate monomers, such as butyl acrylate, 2 ethyl hexyl acrylate, and others can be readily produced from this product, it is said. These materials are water clear liquids which can be polymerized and copolymerized with each other or other monomers to form resinous materials ranging in properties from soft and rubber-like to hard and transparent plastics. Because of their high strength, excellent heat and light stability, water resistance and wide range of hardness and flexibility, the acrylate polymers find extensive usage in the manufacture of pressure-sensitive adhesives; surface coatings on fabric, wood, metal, paper and leather; in addition to serving as modifiers in the compounding of plastics and synthetic rubbers.

Hydropel

Hydropel is a transparent water-repellent coating for exterior masonry surfaces of many kinds. The material after application to a masonry or stone building makes rain and snow "bounce back" on contact, it is claimed. The completely new formulation of Hydropel is radically different from cement and other similar paints or coatings. It does not form a film on the surface, is completely invisible, and the original texture and color of the building is retained. Because of the remarkable resistance to water, the material does not permit dirt and soot to be absorbed into the surface by the infiltration of moisture. The attractive, clean appearance is therefore maintained for considerably longer periods than is otherwise possible.

Sucrose Octa Acetate

A transparent sheet having a parchment-like surface is obtained when a high-grade paper is impregnated with a solution of Sucrose Octa Acetate. Similar solutions on boxboard leave the surface resistant to the effects of oil, water, or grease.

Penford Gums

A patented series of alkyl starch ether derivatives made from corn starch is finding increasing application for obtaining higher mullen, fold and wax pick tests; smooth finish, better erasure and improved gloss; improved high gloss ink printing and grease resistance. Known as Penford Gums they are manufactured in a range of varying viscosities offering the user a choice of modification for any specific requirements. Outstanding characteristics are the ability to form smooth, clear, flexible, continuous films. Solutions are relatively non-gelling and can be handled over a wide temperature range, it is said. Gelatinization temperature is lower, and hydration and dispersion are accomplished more easily than with conventional starches.

Multicolor Industrial Finish

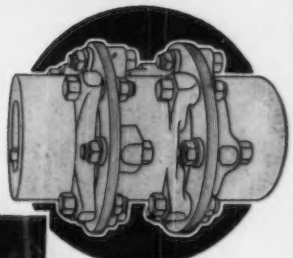
A new multicolor industrial finish has been marketed under the name Plextone. Through its use, it is now possible to spray a product with two or more colors simultaneously in a single spray coat, it is stated. Does not require special spray equipment nor special techniques; multiple colors exist separately within the finish, do not

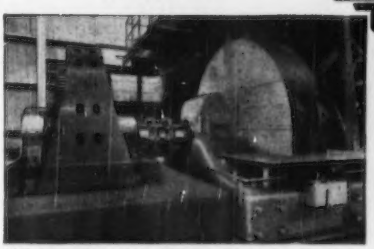
THOMAS *Flexible* ALL METAL COUPLINGS

FOR THOSE TOUGH PAPER MILL DRIVES

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes:
½ to 40,000 HP
1 to 30,000 RPM





153" Sumner Iron Works Chipper—1500 HP @ 277 RPM—Soundview Pulp Co., Everett, Wash.

OTHER CHIPPER INSTALLATIONS
PUGET SOUND PULP & TIMBER CO. Bellingham, Wash.
CROWN-ZELLERBACH CORP. Port Townsend, Wash.
ST. REGIS PAPER CO. Tacoma, Wash.
CROWN WILLAMETTE PAPER CO. Camas, Wash.
RAYONIER, INC. Shelton, Wash.
WEYERHAEUSER TIMBER CO., PULP DIV., Everett, Wash.
BRITISH COLUMBIA PULP & PAPER CO., LTD., Woodfibre, B. C.

THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

• • •

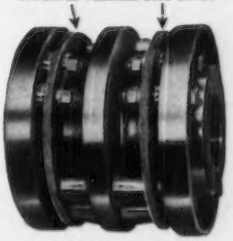
ALL PARTS ARE SOLIDLY BOLTED TOGETHER.

• • •

FOR SPECIAL COUPLING PROBLEMS CONSULT OUR ENGINEERING DEPARTMENT.

BACKLASH, FRICTION WEAR and CROSS-PULL are eliminated.
LUBRICATION IS NOT REQUIRED!

PATENTED FLEXIBLE DISC RINGS



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Specialists on Couplings for more than 30 years

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U. S. A.

merge nor blend, and upon being sprayed create an interlacing color network. Finish does not soak into the paper but grips the top fibers and forms a new and interesting surface which resembles leather, cork or granite. Is offered in solid colors ready to spray.

Case Liner Adhesives

The new adhesives meet JAN-P-140 specifications both for strength, mold and fungi resistance and water resistance, in use with triplex creped or triplex and pleated barrier materials (as in Type 1), and duplex uncreped, coated, saturated or asphalt infused sheets (Type 2). Known as Flintkote No. 704, they are compounded for slow and fast tack range as required in the specification A and B grades, thus, fill the needs of military depots and contractors who supply the armed services. They are applied as seam sealers and closures for waterproof paper bags, wrap and case-liners.

ASSOCIATIONS

(Continued from page 18)

N. E. TAPPI MEETING

The New England Section of T.A.P.P.I. will meet at the Hotel Roger Smith, Holyoke, Mass., on November 17. Dinner will be served promptly at 7:00 p.m. in the main ballroom ($2.50 per person).

The group will be addressed by the National President of T.A.P.P.I., A. E. Bachmann. The subject of his talk will be "OPERATING PRINCIPLES AS RELATED TO QUALITY CONTROL."

This will be the first of a series of meetings to be held during the 1950-51 season devoted to the various aspects of quality control in the manufacture and converting of paper.

MIAMI VALLEY SUPTS. MEETING

Harry E. Hadley, Gardner Board & Carton Co., Middletown, Ohio, is to lead a discussion on "Our Common Problems" as the feature of the November 30, 1950, meeting of the Miami Valley Division of the American Pulp and Paper Mill Superintendents Assn.

THE H. K. FERGUSON COMPANY

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Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys

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AT NIAGARA FALLS

Left to right—William Logan, Provincial Paper Co.; Don Hart, Moore Business Forms; Ernest Vaissiere, Sealright Co.; Harold Perry, Paper Trade Journal; Irving Earle, Upson Co.

WESTERN N. Y. TAPPI MEET

The regular meeting of the Western New York District of the Technical Assn. of the Pulp and Paper Industry took place November 1 at the Prospect House, Niagara Falls, N. Y. The meeting was a joint gathering with the Niagara Branch of the Technical Section of the Canadian Pulp and Paper Assn. Approximately one hundred members and guests enjoyed the excellent dinner and program presided over by Irving Earle of the Upson Co., Lockport, N. Y.

Among the guests introduced at the meeting were Henry J. Perry, editor of the *Paper Trade Journal* and chairman of Empire State Section of TAPPI; J. Butterworth, Socony-Vacuum Co., chairman of the Metropolitan District; Harold Spector, St. Regis Paper Co., chairman of the Northern District; Ralph Prince, American Cyanamid Co., secretary-treasurer, Empire State Section; Homer Rice, DuPont Co., executive committeeman, Empire State Section; and W. Logan, secretary, Niagara Branch, C.F.F.A.

Don Hart, Moore Business Forms, introduced the speaker of the evening, E. Vaissiere, Sealright Co., Oswego Falls, N. Y. Mr. Vaissiere, Job Training Supervisor, discussed "A New Approach to Employee Relations." Drawing from his experience, both as an international union representative and as a management executive, Mr. Vaissiere gave an inspiring talk tracing the growth of present day employee-employer relationship.

"Due to present manpower shortage, management today is more aware than ever of the need for promotion of good human relations with labor," Mr. Vaissiere said.

The importance of indoctrination methods for improvement of these relations was stressed. "Management today needs to do a selling job to its employes — to sell itself and its products to the worker." Mr. Vaissiere also stated that "the importance of each job must be brought out so that pride in accomplishment and pride in industry can be developed."

TO DISCUSS CORRUGATED

Although there are many corrugated box plants in the Chicago area, only a few of them have been active in the affairs of the Chicago Section, Technical Assn. of the Pulp and Paper Industry. At its November meeting this section of TAPPI is presenting a panel discussion "Corrugated A to Z." It is the first program ever devoted to this topic by the local group and has been arranged to appeal to corrugated production people. The meeting will be held Monday evening, November 20, at the Chicago Bar Association, 29 S. La Salle street, Chicago. Dinner will be preceded by a "get-together-cocktail-hour" from 5:30 to 6:30 p.m.

F. D. Long, technical director, Container Corp. of America, will act as Moderator of the panel. The field of "Corrugated Maintenance Engineering" will be the topic of A. Sperling, plant engineer, Downing Box Co., Milwaukee, Wis. "Adhesives in Corrugated Manufacturing" will be discussed by S. F. Thune, sales manager, Midwest Division, National Starch Products, Inc., and D. Santmyers, Industrial Products Development and Service Representative, E. I. du Pont de Nemours. The vice-president of Container Testing Laboratories, C. Zusi, has joined the panel to develop the subject of "Testing and Quality." An additional member of the panel will be obtained, if possible, to close the formal presentation with a talk on "Corrugated From the Buyer's Point of View." A question and answer session will follow the prepared talks.

NORTHWESTERN SUPT'S. MEET

Mace Harris, The Northwest Paper Co., Cloquet, Minn., as Chairman of the Northwestern Division of The American Pulp and Paper Mill Superintendents Assn., has announced tentative meeting dates for both the 1951 Spring Meeting and the 1951 Fall Meeting of the Division. These dates are May 4-5 for the Spring Meeting; September 14-15 for the Fall Meeting.

The Spring Meeting is scheduled for the Radisson Hotel, Minneapolis, Minn.; the Fall Meeting, for the Northern Holiday Resort, Marenisco, Mich.

B. C. SAFETY CONFERENCE

"A very successful conference." This was the general opinion expressed by 22 labor and 22 management delegates and their two co-chairmen who, on October 27, took part in the first Labor-Management Safety Conference to be convened by the Pulp and Paper Industry in British Columbia and the representatives of the International Brotherhood of Paper Makers and the International Brotherhood of Pulp Sulphite and Paper Mill Workers. It was the first labor-management safety conference to be held by any industry in the province.

Sharing the responsibility of directing the day long conference as co-chairmen were for labor, H. L. Hansen, general representative, International Brotherhood of Pulp Sulphite and Paper Mill Workers, and for management, H. D. Todd of the Powell River Co. Ltd. The entire conferences was noteworthy for the quality of the discussions and the consistent interest and enthusiasm of all delegates.

Acting mayor of Vancouver, George Miller, welcomed the delegates in a brief friendly address. For labor, John Teevin, International representative, International Brotherhood of Paper Makers, expressed the desire of the unions to cooperate in seeking intelligent and correct methods to prevent accidents and encourage workers to observe safe practices. Similarly for management, Paul E. Cooper, chairman, Western Branch, Canadian Pulp and Paper Assn., said, "Everyone shares in the vital responsibility of the prevention of accidents and care for the other fellow's welfare. Management fully appreciates that leadership and enthusiasm for results must start at the top. From there it must proceed through every executive, supervisor and foreman; to everyone on every job of work no matter where that may be."

Subjects discussed at the conference included: "Job Safety Instruction," "Safety Enforcement and Discipline," "Safety from a Woman's Point of View," "Responsibility of Employees and Management for Good Housekeeping," "The Value of Plant Safety Committees," "First Aid Training Programmes," "The Supervisor and Safety," and "Creating and Maintaining Interest in Safety." The sessions concluded with a dinner at which several guests were present including pulp and paper top management, officials of the unions and the Workmen's Compensation Board. A notable guest was Joseph Addy, secretary-treasurer, International Brotherhood of Paper Makers from Albany, N. Y.

Arnold Ramer, personnel director, Sidney Roofing & Paper Co. Ltd., was toastmaster. Conference registrars were Cyril Hague, Pacific Mills Ltd., and S. G. Green, International Brotherhood of Pulp Sulphite and Paper Mill Workers.

QUALITY CONTROL DISCUSSED

Sixty-one members and guests were on hand at the first meeting of the season of the Lake Erie Paper Makers and Converters Assn. on October 20th at the Hickory Grill in Cleveland. Mr. Howard Coughlin, instructor in quality control at Penn College and Quality Control Engineer of the Thompson Products Co., presented a very interesting talk on Statistical Quality Control.

"Gravure Printing" will be the subject of the November 17th meeting with Frank B. Johnson of the Intag Division of the Interchemical Corp. discussing the subject from an inkmakers viewpoint and Joseph Martin of the Champlain Co., Inc., handling the press manufacturer's aspect of the subject.

The meeting, as usual, will be held at the Hickory Grill, 929 Chester Avenue, Cleveland with cocktails from 6 to 7, dinner at 7:15 and the meeting at 8:15.

WATERPROOF MFRS. MEET

At the annual meeting of the Waterproof Paper Manufacturers Assn., held at the Blackstone Hotel, October 26, Charles G. Wood, President of Simplex Paper Corp., Adrian, Mich., was unanimously chosen president to succeed A. J. Thiel of the Angier Corp., Framingham, Mass., who had rounded

It is dramatic evidence of the immediate trade-wide acceptance of the PULP-MASTER — and of the need it fills — that today, only 3 years after it was put on the market, some 90 units have already been sold . . . in the U.S., Canada and abroad.

High consistency operation, reduced beating cycles, efficient use of power and low maintenance have been demonstrated in a wide variety of applications.

For complete details, ask your Jones representative, orwrite for Bulletin EDJ-1019B.

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E. D. JONES & SONS COMPANY, PITTSFIELD, MASS.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	Oct. 7	Oct. 14	Oct. 21	Oct. 28*	Nov. 4
1950	105.3	107.5	107.0	106.8r	109.1
	Oct. 8	Oct. 15	Oct. 22	Oct. 29	Nov. 5
1949	*90.5*	*97.1*	*101.1*	*98.6*	*99.0*

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*89.8*	*88.0*
1950	97.6	100.8	101.9	100.5	100.8‡	103.2‡	90.8‡	105.8‡	101.7‡	106.7‡			

* Weekly capacity base increased by 282 tons.
r Revised.
‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.4	88.5	89.3	101.3	101.3	97.1	87.6	101.4
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	88.0	

PAPERBOARD OPERATING RATIOS†

	Oct. 7	Oct. 14	Oct. 21	Oct. 28	Nov. 4
1950	100	102	101	104	102
	Oct. 8	Oct. 15	Oct. 22	Oct. 29	Nov. 5
1949	*92*	*94*	*94*	*94*	*92*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*93*	*83*	*83*
1950	88	92	91	92	91	94	82	100	96	94			

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

out two years of successful administration to that association.

George W. Chadwick, of W. Ralston & Co., Inc., Old Bridge, N. J., was chosen Vice-President of the association, succeeding Mr. Wood.

Philip O. Deitsch, who has served the Waterproof Paper Industry as its Administrative Officer since the day of its inception nine years ago, was again unanimously reappointed Administrative Officer for his ninth consecutive term.

JOIN U. OF ME. FOUNDATION

ORONO, Me.—Receipt of a $1,000 company membership in the University of Maine's new Pulp and Paper Foundation from the Rust Engineering Co., Pittsburgh, Pa., has been announced by John B. Calkin, director of the U. of M. Department of Industrial Cooperation.

The Foundation fosters a six-point program planned to step up the university's training and research programs and to attract and develop young men for ultimate management responsibilities.

A number of companies and individuals have taken memberships in the Foundation during the past few months.

RESEARCH UNIT MOVES

Arrangements are under way for moving to Olustee, Fla., the U. S. Department of Agriculture personnel now engaged in naval stores research at the Southern Regional Research Laboratory in New Orleans, La. The transfer, affecting 15 persons, will be completed gradually between now and January 1.

The transfer is being made, Dr. Hilbert said, in order to house the Bureau's entire Naval Stores Research Division in one location closer to the center of the pine belt—an arrangement which would improve coordination of laboratory and engineering studies on the utilization of naval stores products. The Division's pilot plant for the development of improved experimental processing of pine gum into turpentine and rosin has been in Olustee since 1931. The two laboratory sections to be moved were transferred from Washington to the Bureau's Southern Regional Research Laboratory in New Orleans in 1943, two years after the Southern Laboratory building was completed.

B S & W RESEARCH LAB.

Bloedel, Stewart & Welch, Ltd. have called for tenders for the construction of a research laboratory at their pulp mill site at Port Alberni, B. C.

Cost is estimated at $76,000 for erecting the two-story frame structure measuring 40 by 96 feet with flat tar and gravel roof and siding exterior. The laboratories will be lighted by cold cathode. Stainless steel will be used for bench tops.

The laboratory section will be divided into three major operations for research work and testing on application of forest products from the west coast of the United States and Canada.

Special attention has been given to make services for the working apparatus more accessible through the use of floor ducts and removable panelled ceilings.

The building will also contain library, council room and offices.

ANOTHER STEVENS RAISE

WESTFIELD, Mass. — Announcement of a wage increase of five cents an hour for employes of the Stevens Paper Co., Inc., was made recently by the general superintendent, Raymond J. West.

The increment will include the company's three plants, two of which are located in this city and the third in South Hadley. Approximately 350 persons will be affected by the increase. The Stevens company granted a similar raise to employes in its three plants less than five months ago.

OBITUARIES

Samuel Clair, 60, owner of the Progressive Paper Co., 1841 N. 19th street, Philadelphia, Pa., died recently at his home in Philadelphia.

A. Fred Crossman, 59, president of the Lindsay Wire Weaving Co., died unexpectedly November 4 as he was leaving the Cleveland Stadium after the Notre Dame-Navy game. He had served Lindsay as president and general manager for the past 18 years.

Walter H. Hermann, president, The Hermann Manufacturing Co., Lancaster, Ohio, died November 8.

Sidney M. Phelan, Jr., 64, a director and senior vice-president of the West Virginia Pulp and Paper Co., died on November 8 at the Stamford Hospital, Stamford, Conn. Coronary thrombosis was given as the cause of death.

Mr. Phelan had been an officer of the West Virginia Pulp and Paper Co. since 1940, when he was named vice-president in charge of sales, and a member of the firm's board of directors since 1945. In 1948 he was named first vice-president, a title, which was changed to senior vice-president last February. His period of service goes back to 1927, when he joined the company as head of board sales.

For several decades Mr. Phelan has exerted considerable influence in the pulp and paper industry, being active on the executive committees of the Kraft Paper Assn., the National Paper Board Assn., and the Fourdrinier Kraft Board Institute.

John A. Wiener passed away November 9 at his home in Emporia, Va. Mr. Wiener was manager of the Jarratt plant of Johns-Manville from the time it was built in January 1939 until he retired due to ill health in May 1941.

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POSITIONS OPEN

We can place managers and superintendents for bag and box factories; managers and superintendents roofing felt mills; managers, superintendents and foremen for paper converting plants; employment manager. Superintendent for mill making blotter, cover and specialty papers.

Salesman for mechanical equipment, will consider mechanical engineer, supt. or asst. supt. qualified to sell; several foremen for Fourdrinier and Cylinder machines; master mechanics, plant engineers, designers, draftsmen and head draftsman for mills and for firms building paper and pulp mill machinery.

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LIST YOUR CONFIDENTIAL APPLICATION WITH US

We will keep you informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
SPECIALISTS IN PLACING PULP AND PAPER MILL EXECUTIVES

N-16

WANTED
BAG FACTORY SUPT.

To run modern paper bag making plant specializing in plain and printed kraft bags of many types. Applicants must be experienced in adjusting, machine maintenance, trouble shooting, and supervision. Our people know of this ad. Give complete data first letter including age, experience, salary requirements. Confidential.

Box 50-551, care Paper Trade Journal.
N-23

WE HAVE EXCELLENT OPENING for a machine designer with experience, preferably in pulp and paper mill or heavy machinery. Technical graduate or equivalent desired. Salary commensurate with ability. This is a permanent position. When replying, please give details, including experience, qualifications and salary expected.

THE APPLETON MACHINE COMPANY
Appleton, Wisconsin

N-23

WANTED

Beater Engineers and Back Tenders for one machine mill in East, making folding grades. Must be experienced. Good pay and steady employment. Address Box 50-543 care Paper Trade Journal. N-23

HELP WANTED

GRADUATE CHEMICAL OR MECHANICAL ENGINEER

For Production Engineering position on Supervisory Staff of Paper Board Mill located in Indiana. Mill is unit of one of leading and nationally recognized paper board, carton and container manufacturing concerns. Unusual opportunity for aggressive young man to learn production and control methods. Advancement should be rapid, depending only upon the ability of the man to assume responsibility. Inherent supervisory ability important. Prefer man recently graduated from recognized Engineering College. Please give details of background in first letter. Address Box 50-533 care Paper Trade Journal. N-16

CHEMICAL ENGINEER

Degree not essential. Must have actual experience in research and development work on wood fiber insulation board products. Experience in field of coatings and acoustical products valuable. Unusual opportunity for person with necessary background and experience. Permanent position, with large manufacturing plant in South. Good salary. Only qualified need apply. Replies confidential. Our personnel know of this ad. Address Box 50-532 care Paper Trade Journal. N-23

ASSISTANT SUPERINTENDENT

We have been looking for an Assistant Superintendent for a long time but haven't found the right man. If you are a young man with a combination of technical training and paper machine experience, this may be the right opportunity for you to get ahead. We will pay what you are worth. Write Box 50-514 care Paper Trade Journal.

N-16

PRODUCTION CHIEF

Paper converting, nationally known, Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 50-443, care Paper Trade Journal. TF

YOUR BOSS wanted for Board Mill in East. Must have experience on folding grades. Address Box 50-473 care Paper Trade Journal. TF

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 50-378 care Paper Trade Journal. TF

HELP WANTED

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

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117 Dun Bldg., Buffalo 2, N. Y.

TF

WANTED—PROJECT ENGINEER — California. Process Plant Design and Project Engineer. Experience in pulp and paper and building materials plants preferred. Minimum five years experience and engineering degree. Competitive salary depending upon individual qualifications. Address Box 50-548 care Paper Trade Journal. N-16

WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work. Excellent opportunity with old established machinery manufacturer. In reply, give resume of education, experience and current salary. Address Box 50-513 care Paper Trade Journal. TF

SOUTH AMERICA—Machine Tender, under 35, wanted for mill in Peru—both Fourdrinier and cylinder machine experience desirable but not essential—good opportunity for advancement—give experience and family status. Address Box 50-522 care Paper Trade Journal. N-16

WANTED — Experienced Machine Tenders, Back Tenders, Third and Fourth Hands, Beater Engineers. For .015 and .009 cylinder and fourdrinier jute mills, located in Reading, Penna. Seven day week. Apply, Reading Corrugated Container Corp., Box 117, Reading, Penna. Phone, Reading 7123. N-23

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Desiring new and better contacts with New England paper and textile mills, converters and other large users of chemical products, a man will be available January first. Twenty-five years experience as sales engineer and branch manager. Fundamental knowledge of user's manufacturing processes. Wide acquaintance with the executive and technicians who determine the sale. Ability to organize and train technical salesmen.

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KRAFT PULP AND PAPER MILL ENGINEER AND OPERATOR

wants to contact mills.

Cement Sacks, Gumming, Envelopes and other Specialties.

Address Box 50-439 care Paper Trade Journal. D-7

SUPERINTENDENT—Energetic young man desires to make change. Experienced on Yankee Fourdrinier machines manufacturing facial, towels, toilet tissue and napkins (colored and white). Good, steady conscientious worker. Starting salary $7500 plus moving charges. Address Box 50-538 care Paper Trade Journal. N-23

SUPERINTENDENT 25 YEARS PRACTICAL EXPERIENCE manufacturing folding boxboard and high grade light and heavy weight specialties from sulphite, sulphate, groundwood and old paper stock. Aggressive, capable man, good references. Address Box 50-518 care Paper Trade Journal. N-16

ASSISTANT SUPERINTENDENT or Foreman with 20 years experience in converting specialty papers. Can handle help, get quality and production. Best of references. Address Box 50-530 care Paper Trade Journal. TF

FOR SALE

GOOD VALUES FOR SALE

48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
52" Cameron 44-W Rewinder.
32" Hobbs Box Slitter.
36" Hamblet Sheeter.
58" Finley Sheeter.
100" Horne Sheeter.
68" Oswego mill type Power Cutter.
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PRICED FOR IMMEDIATE SALE

One 60 inch 10 roll supercalender stack complete with Westinghouse drive and Foxboro pneumatic loaders. Drive new 1947. Stack completely rebuilt same year. Two-ton traveling bridge crane for servicing stack included.

One 84 inch two-drum rewinder complete with Reliance V.S. drive. All new 1947.

Stack and rewinder excellent condition and ready for actual demonstration.

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N-30

FOR SALE—Electric Motors and Equipment. Used DC Motors, ½, 1, 1½, 3, 5, 7 h.p.; also switch boxes, starters, speed controllers and rheostats. Address Box 50-558 care Paper Trade Journal. N-16

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1—112" Cameron, Type 18, 60" rewind.
1—3' Shartle Hydrapulper, with motor.

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1—10 ft. x 30 ft. Barking Drum.

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2—E. D. Jones Beaters, 60x68 Beater Rolls.
1—1½ lb. Laboratory Beater.
1—500 lb. Beater—iron tub.
1—Dilts Iron Tub Laboratory Beater. Beater roll 14" diameter x 10½" face, including motor.

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1—72" 5 roll Calender Stack.
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1—96" Murray 4 knife Chipper—anti-friction bearings.

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1—30" diameter x 72" face.
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2—14 ft. Rotary Digesters.

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1—Reliance Electric Drive, complete with 5 gear head motors.
2—#3 Reeves Drives (totally enclosed).

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1—Complete unit, consisting of 6 dryers, 36" diameter x 38" face, including frames, gears, anti-friction bearings.
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1—48" diameter x 91" face.
1—36" x 143".
1—24" x 130".
3—36" diameter x 96½" face.
1—48" diameter x 70" face.
2—48" diameter x 92" face.
1—48" diameter x 82" face.
23—36" diameter x 70" face—complete with bearings, gears & frames.
2—Dryers 48" diameter x 136" face.

EMBOSSER
1—84" Hudson Sharp Toilet Embosser. Spare engraved roll.

FELT CONDITIONER
1—146" Nash Felt Conditioner.

FLAT SCREENS
1—6 plate Shartle Flat Screen
4—Packer, 12 plate, roller sheet type.

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Vertical frames for 100 dryers, 48" diameter, with bearings.

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1—Horne Jordan.
2—Noble & Wood Mammoth Junior.
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2—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.

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1—Daniels Rag Cutter.
1—Taylor-Stiles Giant Shredder, portable.

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1—125 h.p., 1700 r.p.m.
1—50 h.p., 850 r.p.m.
Write us regarding your requirements.

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3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.

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Various cone and assorted pulleys.

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1—200 ton hydraulic Pulp Baler. (Practically new).

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1—Jones Pulper. Complete with motor and drive.
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Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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1—104" Beloit two bowl reel.

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Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

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1—#2 Bird Rotary Screen.
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1—115" 2 drum Waldron
2—112" Cameron—Type 18.
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1—10 x 20 Shartle Duplex.
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Advise as to your requirements.

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5—Suction Boxes, 82" drilled face x 6" wide.

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Hydraulic Press box size 52" long, 48" wide, 42" deep. Built for High Compression of Fibrous Materials. Suitable for Condensing Bales of Paper, Shredded Pulp or any such Material. Final Pressure 5 Tons Per Square Inch. Will Package Loose Air Dry Shredded Pulp into Units 12 x 14" about 16" Long Weighing 100 Pounds, Requiring No Wire Ties. Should make an Excellent Press for Pulp Mill. Press Originally used for Recompressing Sugar Cane Fiber for Overseas Shipment.

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1—Moore & White Winder; 86"-4 drum, complete with drive and 6 brass expansion shafts. 185'-14 Canvas Back Leather Belt.

1—Reeves Drive.

2—Fly Knives, right hand, 108", for Black & Clawson Cutter. New.

1—Exciter M. G. Set-220-440, 10 H.P., 3 phase, 60 cycle, 125 volt, 5 K. W., D. C. Generator.

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8 Air Dry Tons per day of pure chestnut wet lap available for immediate shipment. $35.00 per air dry ton, FOB Bristol. Send for samples.

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FOR SALE—2 used 46-inch Waldron 6-brush coating units with complete festoon drying system and reelers. Good condition. Price reasonable. Address Box 50-253 care Paper Trade Journal. TF

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WANTED—W & P Shredders, Evaporators Generators and Boilers, Slitters, Cutters Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-18 care Paper Trade Journal. TF

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WAX PAPER MACHINE ANY WIDTH. CONTACT GEORGE S. BLEYER, BLEYCO PAPER CORP., 419 WEST 55TH STREET, NEW YORK CITY. N-16

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Serviceable Grocery Bag Machine
8 through 20 lb. sizes.
Recent Model Potdevin preferred.
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GLASSINE PAPER—ROLLS ONLY
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ANY COLOR
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INTERESTED IN PURCHASING Seybold Power Cutters all sizes, Sheeters, Slitters, Seybold and Sheridan Die Cutting Presses. Please write description and price loaded Cars fob. Al Vernon 110 South 8th Street, Brooklyn 11, N. Y. N-16

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-193 care Paper Trade Journal. TF

WANTED—Immediately one 48" Beck Sheeter with at least three slitters, one 50" Seybold Cutter on good operating condition. Address Box 50-557 care Paper Trade Journal. N-16

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PRESSED COUCH ROLL JACKETS

- You get more wear from each jacket.
- They do not mark the sheet however worn they become.
- Produce firmer flatter sheets separating cleanly.
- Easily cleaned and cause no 'licking-up' of the sheet.
- Enable quicker acceleration and higher speed running.
- Made in a wide range of finishes to suit all types of paper.

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Mitchell jackets—'Horse' brand all-felted and 'Greyhound' with woven insertion.
Also PRESSED FELTS for M. G. Dryers.

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is impossible with old, worn Screen Plates. Change to new, fine-cut "Fitchburg" Screen Plates and be amazed at the instant improvement in QUALITY.

"FITCHBURG" *New Type—Duplex Slot*
FLAT PLATES
Rolled Bronze and Copper

Plain or Chromium Plated
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JONES SCREEN PLATES

FITCHBURG
Screen Plate Co., Inc.
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Fitchburg
Massachusetts

Apply Heat Where Evaporation Takes Place

Wet exposed surface

..With Red Ray Burners

Red Ray Manufacturing Co., Inc.
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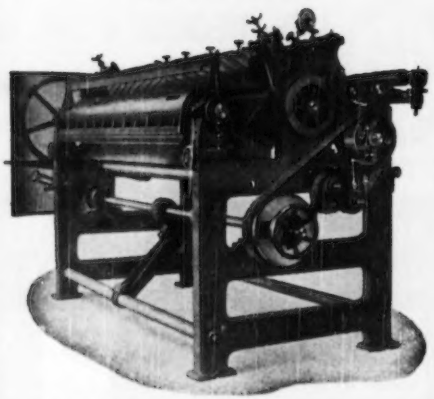
MODEL 28

ROLLER BEARING CUTTER



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Norton Co.

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The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
National Starch Products, Inc.
Nopco Chemical Co.
Painley Products, Inc.
Stein, Hall & Co., Inc.

AGITATORS
American Paper Machy. & Engrg. Works, Inc.
Appleton Machine Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

ADJUSTABLE SHAKE MOTION
Manchester Machine Co.

ALLOYS
Michigan Steel Casting Co.

ANTIFOAM
American Cyanamid Company
Industrial Chemicals Division
National Aluminate Corp.
Nopco Chemical Co.

APRON CLOTH
Williams-Gray Co.

BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

BALL MILLS
F. L. Smidth & Co.

BARK BURNER
Nichols Engrg. & Research Corp.

BARK PRESS
American Defibrator Co.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

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Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co.

BEARINGS
Black Clawson Company
E. D. Jones & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Goodyear Tire & Rubber Company
Link Belt Company

BLEACHING AGENTS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co.

BRUSH ROLLS
M. W. Jenkins Sons, Inc.

BRUSHES
M. W. Jenkins Sons, Inc.
Gus Reidel & Son

BURSTING TESTERS
B. F. Perkins & Son Inc.
Testing Machines, Inc.

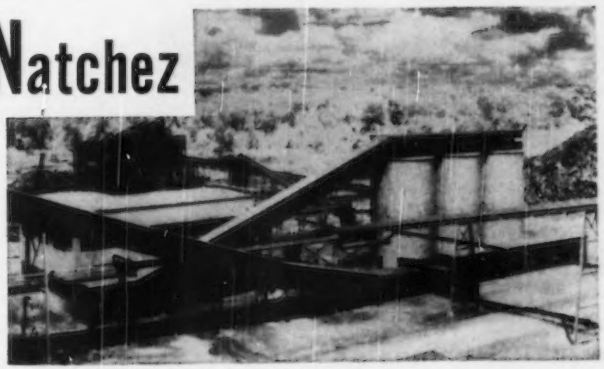
CALENDERS
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

CARRIER ROPE
Williams-Gray Co.

CASEIN
American Cyanamid Co.
Industrial Chem. Div.
Bunge Pulp & Paper Co.
Hercules Powder Co.

CASTINGS
Appleton Machine Co.
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Hardinge Company, Inc.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Stebbins at Natchez



WHEN the International Paper Company's new Southern Kraft Division mill began operation at Natchez, Mississippi, three large silos built of Stebbins reinforced Semtile construction were ready for storing the southern hardwood chips for processing into pulp.

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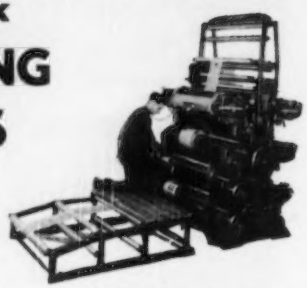

4-color multi-length web press. Note long paper run between 1st and 2nd colors and visible inspection before rewinding.

OIL INK PRESS

MULTI-WALL TUBER

There are POTDEVIN presses for every need from 10" to 40" web widths . . . one to six-color work . . . for direct connection to paper bag and other paper converting machinery or roll-to-roll.

No matter what the material to be printed, light board, paper, cellophane, glassine, etc., you can depend on POTDEVIN presses to do it better.

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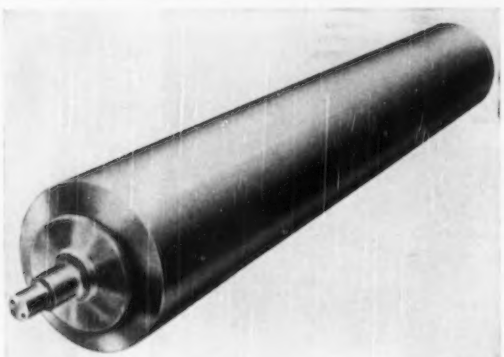

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Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gotlesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CHUCKS
Efficiency Engrg. Co.

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Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
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Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

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Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Anode Div.
American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
National Wax Co.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS
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COMPLETE FOURDRINIER ROLL GRINDING
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Nash Engineering Co.
Roots-Connersville Blower Corp.

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The Permutit Company

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Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

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Ebasco Services
Vance P. Edwardes
Frank W. Egan & Co.
Gibbs, Ralph
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
Roderick O'Donoghue
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

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Paper & Industrial Appliances

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Black Clawson Company
The Brown Instrument Co.

CONTROLS
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The Bristol Company
The Brown Instrument Co.
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
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Dilts Machine Works
Hudson-Sharp Machine Co.

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Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O
Shartle Brothers Mch. Co.

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Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
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COTTON LINTER
Railway Supply & Mfg. Co.

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Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Thomas Flexible Coupling Co
Valley Iron Works
Waldron Corp., John

CRANES
Cleveland Crane & Engrg. Co
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

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Gibbs-Brower Company, Inc.
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Harris-Seybold Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg Co.
Taylor, Stiles & Co.

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Manchester Machine Co.

CYLINDERS
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National Tube Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DE-INKING
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General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
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W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Lukenweld
Pusey & Jones Corp.

DIGESTERS (Continuous)
Paper & Industrial Appliances

DIRTEC
Bird Machine Co.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Lodding Engrg. Corp
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

DRIERS
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
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Appleton Machine Co.
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

DUSTERS
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Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

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Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
John Waldron Corp.

EMBOSSING ROLLS
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Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wallerstein Co., Inc.

EVAPORATORS
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Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

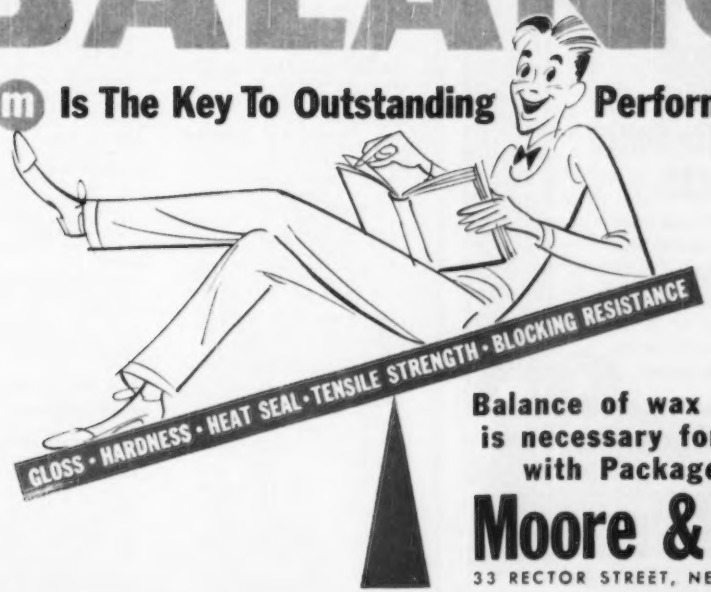
FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hardinge Company, Inc.
Leeds & Northrup
Merrick Scale Mfg. Co.
The Permutit Company

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

BALANCE

(m) Is The Key To Outstanding Performance



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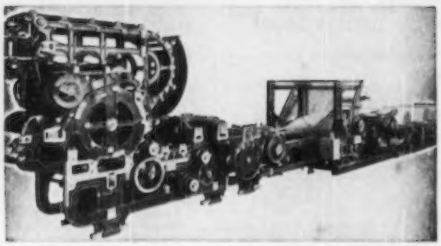

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Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.

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Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Green Bay Fdy. & Mch. Co.
Hardinge Company, Inc.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Towmotor Corp.

FORMATION
Thwing-Albert Instrument Co.

FORMING MACHINES
Black Clawson Company
Downingtown Mfg. Co
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRINDERS
Bridgeport Safety Emery Wheel Company
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES, WEB
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Davis Engrg. Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
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Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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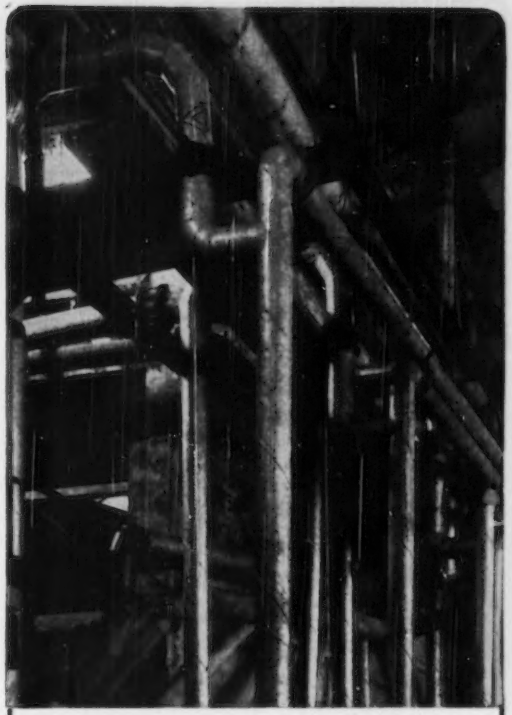

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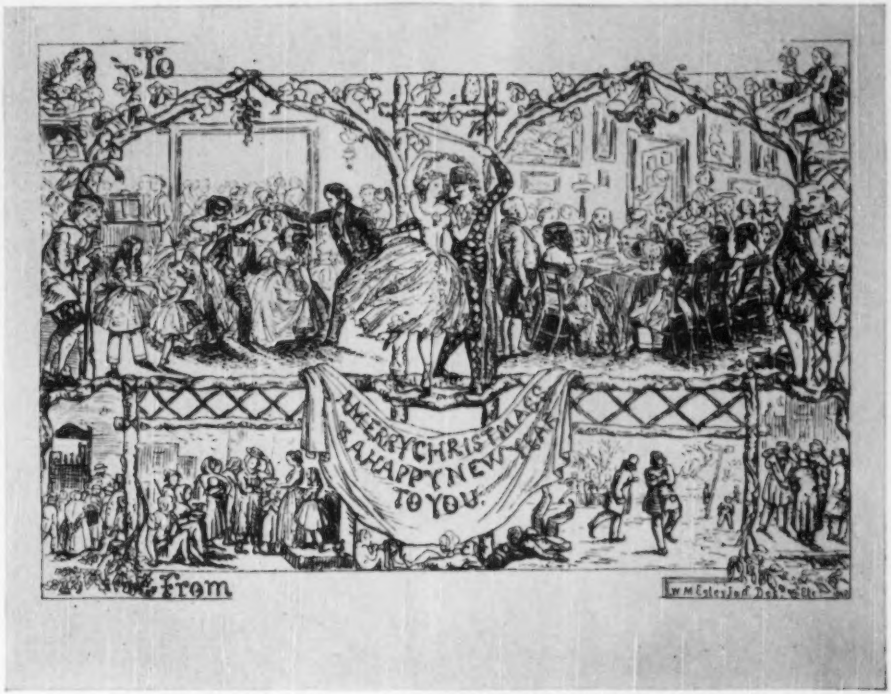

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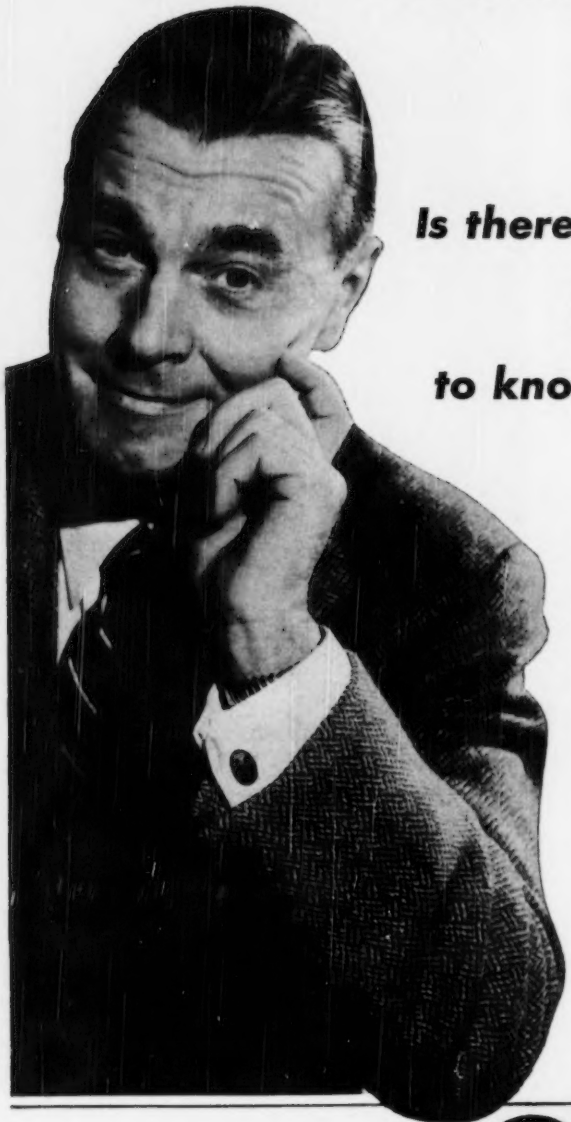

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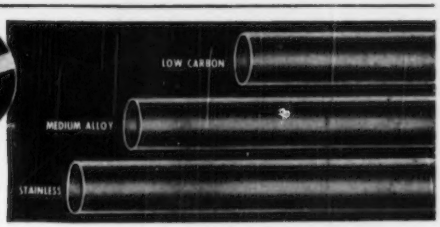

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